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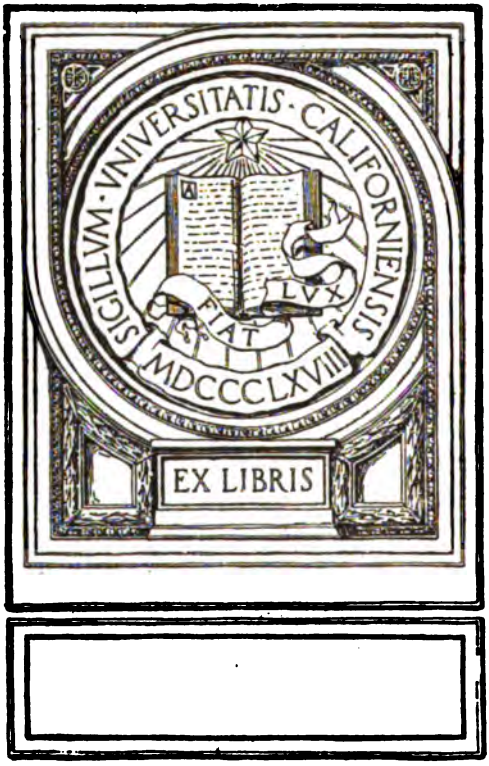
MILITARY AND NAVAL AMERICA

Captain Harrison S. Kerrick,
C.A.C., U.S. Army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MILITARY AND NAVAL AMERICA

U. S. Cavalryman. Packed saddle, full equipment (near side)

MILITARY AND NAVAL AMERICA

BY

HARRISON S. KERRICK

CAPTAIN, COAST ARTILLERY CORPS, UNITED STATES ARMY

DIVISION SUPERINTENDENT OF SCHOOLS, PHILIPPINE ISLANDS, 1901

GOLD MEDALIST, 1913; SILVER MEDALIST, 1908, THE MILITARY SERVICE INSTITUTION OF THE UNITED STATES

WITH AN INTRODUCTION BY

EDMUND J. JAMES, PH.D., LL.D.

PRESIDENT UNIVERSITY OF ILLINOIS

ILLUSTRATED

GARDEN CITY NEW YORK

DOUBLEDAY, PAGE & COMPANY

1916

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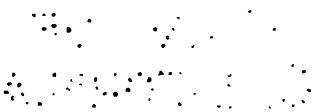

DEDICATION

TO YOUNG AMERICA NOW ATTAINING MAJORITY AND SUFFRAGE, TO WHOM OLDER AMERICA MUST SOON SHIFT THE BURDEN AND RESPONSIBILITY OF SAFE-GUARDING THE PEACE AND INTEGRITY OF OUR REPUBLIC AND UPHOLDING ITS FLAG IN OUR INSULAR POSSESSIONS, THIS VOLUME IS EARNESTLY DEDICATED

343127

ACKNOWLEDGMENT

AS FAR as practical, the language of Army and Navy regulations, manuals, official and semi-official reports and publications has been used in order that this volume may be considered a compendium of trustworthy military and naval information of educational value and interest to students, teachers, and the general public.

The *International Military Digest*, the Service Journals, and Service Weeklies were sources of current military information.

To all who have assisted I hereby acknowledge appreciation and express thanks.

THE AUTHOR.

Fort Leavenworth, Kans.
Sept. 1, 1916.

FOREWORD

NATIONS come and go. Mankind goes on forever.

We are no longer a provincial people.

The Monroe Doctrine, Open Door in China, Exclusion of Orientals, Admission of Europeans, Our Insular Possessions, Panama Canal, Foreign Commerce and Relations make our Nation continental, hemispheric—world-wide in its functions and obligations.

We presume to lead the world toward Universal Peace, and to personify Neutrality and Humanity.

But when Diplomacy fails the only arbiter is armed physical force—War.

Can our treasureland of peace and plenty attain and maintain its aspirations? Is it fitted to survive? Each generation must answer anew.

Let us pause, in our characteristic Americanism, and review the National Defense, remembering that "Eternal Vigilance is (still) the price of Liberty," and that in the last analysis, the security of our homes, institutions, and constitution is contingent upon adequate Military and Naval Power.

This volume sheds light upon Military and Naval America, and will better acquaint Americans with those citizens who consecrate their lives to Safeguarding this Nation:

Our Soldiers, Sailors, Marines, and Coast Guard;

Our Army and Navy, the Bulwark of the Republic.

THE COUNSELOR

Friendship is a poor adviser; politicians deep and wise
Many times are forced to learn the lesson from their enemies;
Diligent and wary conduct is the method soon or late
Which an adversary teaches; whilst a friend or intimate
Trains us on to sloth and ease, to ready confidence, to rest
In careless acquiescence; to believe and hope the best.
Look on earth! Behold the nations, all in emulation vying.
Active all, with busy science engineering, fortifying;
To defend their hearths and homes, with patriotic industry.
Fencing every city round with massive walls of masonry,
Tactical devices old they modify with new design;
Arms defensive and offensive to perfection they refine;
Galleys are equipped and armed, and armies trained to discipline.
Look to life, in every part; in all they practice, all they know
Every nation has derived its best instruction from the foe.

—From the Greek, 400 B. C.

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U. S. Cavalryman. Packed saddle, full equipment *Frontispiece*

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INTRODUCTION

My friend Captain Kerrick has honored me with an invitation to write an introduction for his book on "Military and Naval America." He certainly did not do it because of any expert knowledge which I have in regard to the Army and the Navy, or of the way in which these two branches of the Service should be organized or administered, for I have had no experience which would justify me in expressing an expert opinion on this subject. I have, however, some very decided ideas as to the fundamental basis of military and naval power of a nation so long as there is any need for service of this kind.

I was a small boy when the great Civil War broke out, but I was not too young to be struck by the fact that some of the boys in the neighborhood went to the front and some did not; nor was I too small to ask the question of my mother, "Why did Sam Brown enlist as a soldier, and why did Richard Jones stay at home?" For they looked to me for all the world exactly alike, so far as the claims of the country upon their services were concerned. My mother's answer was that Sam Brown was more patriotic than Richard Jones, and with that answer I had to be satisfied.

Later in the War, when I was a little older, I saw that some of the men in the neighborhood were compelled to go to war by law, while others, seemingly equally strong and vigorous, were excused from service; and the whole thing struck me as mysterious and unaccountable, for I had heard my father say, in the most vigorous terms, that every youngster who was strong enough ought to enlist to defend the Union.

After the waves of the Civil War died away and we heard little or nothing except of a continuous diminution of Govern-

ment vessels and a continuous shrinkage of the Federal army, the whole question of an army and a navy passed out of my mind, as out of that of the average American youngster who grew up in the piping times of peace following the Civil War.

Later, when as a young man I went to Germany for the purposes of university study, my attention of course was called to the, to me, unknown system of universal military service. I was prejudiced against it, as every American naturally is. I reacted unfavorably to the sternness and vigor with which the military drill was carried on. I resented, as a thoughtless man would, the requirement of military service from everybody able to perform it. As I became more used to the system I began to study it as an economic problem and as an element in the economic development of the country. I found my opinion upon the system as a system changing—mildly for a time—but finally in a very radical way. Afterward, when I examined the same system in France, in Italy, and in Switzerland, I became thoroughly converted to the principle that if a country needs to defend itself, that burden of defense should rest upon all alike and not merely upon the small portion of the community from whom the armies were so largely recruited, by appeals to their patriotism or by one or another of the infinite forms of bulldozing which may be applied to secure enlistments, or by offering money rewards to men for risking their lives.

I finally became convinced that if a nation has any serious burden of military and naval defense, the only efficient, economical and democratic system is that of universal military service. If we only need a handful of men, of course, it is possible that a sufficient number will be found among that element of young men in the community who see in a soldier's life, in the possibility of adventure, etc., a career which is satisfactory. But if the army must be a large one, then some form of compulsory military service must be introduced, and the only really democratic, fair, and equal one is that under which,

as all alike profit from the advantages which a stable government affords, so all alike shall be subject to the burdens of its support.

A brief glance at the actual course of events in the United States, as compared with what happened in France and Germany at the opening of the Great War will illustrate what I mean.

When the Unionists first called for troops in 1861 there was immediate response on the part of the very best classes of the community. The fellows who flocked first to the standard were those to whom the very highest motives appealed most strongly, and when in this way the cream of the population, so to speak, was picked off, then a resort was had to the payment of bounties. Then when in 1862 the draft had selected certain people by lot, there was a sort of current superstition that the lot was God's way of determining who should go. And then any one drafted who had enough money to hire some poor devil to take his place was permitted to do so. What a repulsive thing it is to have a Republic hiring men to go out to fight for it, taking all the risk of losing their lives or becoming maimed, and incurring the suffering of their families with all its countless ramifications, in return for a paltry five hundred or a thousand dollars offered as a bounty and thirteen dollars a month extra!

When Rome began to fill the ranks of its legions by the hiring of mercenary troops, it had already begun to go downhill, and the end of the republic, and the ultimate end of the people, was just as certain as the rising and setting of the sun.

When the call for soldiers came in the republic of France every man who was ablebodied and who was not excused for other service or on special grounds marched out in answer to the call—rich and poor alike, university and non-university men, ignorant and learned; and the burden was distributed in that way as nearly equally as human brain can devise.

England, of course, did the same thing at the outbreak of

the war as we did at the outbreak of the Civil War, viz., call for volunteers. And the thoughtful, generous-souled, and the patriotic answered the call by thousands. But when the Government wanted tens of thousands, and hundreds of thousands, and millions, of course, such an appeal broke down. The next thing was a good example of that strange hypocrisy which England and America both practise, namely, while preserving the voluntary system in form and talking about a system of volunteers, the actual adoption of such methods as to produce pressure, by the thousand and one indirect ways in which a community can force those who do not want to enlist to do so; And I know of nothing more pathetic and nothing more humiliating than the efforts that were put forth by the English people to fill the ranks of the regiments by a so-called voluntary system, except our own method of doing things in the Civil War. Unequal, unfair, wasteful, undemocratic, are the words which properly describe the English and American methods of raising so-called volunteer armies. And, of course, the whole plan of a so-called volunteer system had to be given up in England, as it was in our own Civil War, and as it will be in every country in which it is necessary to raise a large army—an army composed of any considerable percentage of the able-bodied males of the community.

I found that the Swiss had made a decided improvement on the German system in the direction of democracy. The German system calls on everybody—the son of the Emperor as well as the son of the poor ditch-digger and the washerwoman—to perform military service, and no pull, political, commercial, aristocratic, governmental, however strong, suffices to excuse either in Germany or France, any man physically able to perform his military duty from falling in line and taking his share. But if a man were excused for physical reasons in Germany or France, he thereby escapes, of course, a very important part of the burden of national defense.

In Switzerland I understand they have gone one step farther,

and if a man is excused from military service on the score of physical incapacity, he is required to pay a supplementary tax, proportioned according to his ability to pay, for the support of the armies in the field. When this scheme of universal military service is once carried through to its logical consequences and the Government is as free to draft money, wealth, and resources, as it is to draft lives, we shall finally get to a truly economic and democratic system of national defense, and then everybody will feel that, while it is perhaps an awful burden, it is at least as equally distributed among all the members of the community as human beings can make it.

Some of our people think that we shall not need a great army or a great navy. Pray God that it may be so. The present signs, however, are not very favorable for that view, and if we are to build a great army or a great navy, let us adopt a thorough, democratic, economic, and efficient system, instead of the one we have relied upon hitherto.

There is, of course, another aspect of this case which is one of the most difficult of all, namely, the unwillingness of the American people to accept a really efficient scheme of military and naval organization. Certainly our method of placing and caring for navy yards and military forts is so perfectly idiotic that no one can defend it, and yet no one is strong enough to introduce a newer or a better system.

Perhaps the time will come, if we do have to have a great army and a great navy, when the political graft in that larger sense of inefficiency because of political considerations—I am not speaking here of bribery or anything of that sort, for it has no place in this discussion—will have passed away and the American people will see that it is a crime, not merely a blunder, but a crime against the men who are called upon to serve the country, for us to have an inefficient system under which they would certainly lose their lives, and possibly without preserving the country.

To accomplish this it will be necessary to educate the people.

Let them become more interested in our army and navy, understand more definitely what they really are and what they are trying to do. As a contribution toward this particular problem, I think this book of Captain Kerrick's is most valuable, and I wish for it the very widest reading.

(Signed) EDMUND J. JAMES.

University of Illinois,
Urbana, Illinois
August 1, 1916.

MILITARY AND NAVAL AMERICA

CHAPTER I

EXCERPTS FROM "STATEMENT OF A PROPER MILITARY POLICY FOR THE UNITED STATES"

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS, BY DIRECTION OF THE SECRETARY OF WAR

THE MILITARY PROBLEM CONFRONTING THE UNITED STATES

1. *The evolution of national military policies.*—National policies are evolved and are expanded as the Nation grows. They reflect the national sense of responsibility and also the national ambitions. They constitute the doctrine underlying acts of statesmanship and diplomacy. A nation's military policy is the national doctrine of self-preservation. The world is never without virile, capable, and progressive nations, the circumstances of whose development have imbued them with the belief that their vital interests demand an active, aggressive policy. They are forced to resort to universal service in the effort to fulfill, at any cost, what they conceive to be their destiny. In the United States the development of the Nation has proceeded under an environment so favorable that there is no well-defined public opinion in regard to what constitutes an adequate military policy. Heretofore isolation, combined with the necessity of preserving the balance of power, has been a sufficient guaranty against strong hostile expeditions from Europe or Asia. The safeguard of isolation no longer exists. The oceans, once barriers, are now easy avenues of approach by reason of the number, speed, and carrying capacity of ocean-going vessels. The increasing radii of action of the submarine, the aeroplane,

and wireless telegraphy all supplement ocean transport in placing both our Atlantic and Pacific coasts within the sphere of hostile activities of oversea nations.

The great mass of the public does not yet realize the effect of these changed conditions upon our scheme of defense.

Another thing that militates against the evolution of a sound military policy for our country is the erroneous conclusion drawn by the people from our past experiences in war. In developing such a policy victory is often a less trustworthy guide than defeat. We have been plunged into many wars and have ultimately emerged successfully from each of them. The general public points to these experiences as an indication that our military policy has been and still continues to be sound. That this is not really the belief of those in authority is shown by the fact that each war of importance has been followed by an official investigation of our military system and the policy under which it operated. The reports of these investigations give a startling picture of faulty leadership, needless waste of lives and property, costly overhead charges augmented by payment of bounties to keep up voluntary enlistments, undue prolongations of all these wars, and finally reckless expenditure of public funds for continuing pensions. These documents supply convincing proofs that all such shortcomings have been due entirely to a lack of adequate preparation for war in time of peace. But we have not yet learned our lesson. It has never been driven home by the bitterness of defeat. We have never known a Jena or a Sedan. At no stage of our national life have we been brought face to face with the armed strength of a great world power free to land sufficient forces to gain a foothold at any desired portion of our coasts. That we have to some extent felt this danger is evidenced by our efforts to provide a navy as a first line of defense and to supplement it with the necessary harbor fortifications; but we have not yet realized that our ultimate safeguard is an adequate and well-organized mobile land force. Experience in war has shown the need of these

three elements but the public has not yet demanded that they be perfected, coördinated, and combined in one harmonious system of national defense. *Not until this has been accomplished will a proper military policy for the United States be adopted.*

2. *Our abiding national policies.*—The majority of our people have always believed in asserting their own rights and in respecting those of others. They desire that the cause of right should prevail and that lawlessness should be crushed out. To live up to these high ideals imposes upon us new duties as a world power; duties that require something more positive than a policy of mere passive defense. In addition, there are two underlying and abiding national policies whose maintenance we must consider as necessary to our national life. These are the "Monroe Doctrine" and the policy of avoiding "entangling alliances." They are distinctive and affect our international relations in a definite manner. In addition, policies may develop in the future as a result of international relations with respect to trade conditions.

A general consideration of our responsibilities as a nation and of our geographical position indicates that the maintenance of our abiding policies and interests at home and abroad involves problems of defense measures both on land and on sea. The solution of the general problem of national defense must be sought in the provision of adequate land and sea forces and a consideration of their coördinate relationship.

3. *Coördinate relationship of Army and Navy.*—Upon the Navy devolves the solution of the problem of securing and maintaining control of the sea. To accomplish this it must be free to take the offensive promptly—that is, to seek out and defeat the enemy fleet. The use of any part of the high-sea fleet for local defense defeats the chief object of the Navy and is a misuse of naval power. A fleet defeated at sea and undefended by an adequate army is powerless either to prevent invasion or even its own ultimate destruction by combined hostile land and naval forces. In illustration compare the cases of the Spanish fleet

at Santiago and the Russian fleet at Port Arthur with the present example of the German, Austrian, and Turkish fleets under the protection of land forces.

Upon the Army devolves the task of gaining and maintaining on shore the ascendency over hostile land and naval operations. To accomplish this it must be able to seek out promptly and to defeat, capture, or destroy the invader wherever he may attempt either to secure a footing upon our territory or to enter the waters of our harbors with the objective of threatening the destruction of the seaport or of a fleet driven to seek refuge or repair therein.

The problems involved in operations against hostile land forces are complex and include only as an incident the protection of harbor defenses on the land side. The problems of harbor defense against attack from the sea are simple and passive in their nature.

4. *Coördinate relationship of statesman and soldier.*—In our country public opinion estimates the situation, statecraft shapes the policy, while the duty of executing it devolves upon the military and naval departments.

Such a doctrine is sound in direct proportion to its success in producing a military system capable of developing fighting power sufficient to meet any given national emergency, at the proper time, supported by all the resources, technical and economic, of the country, in a word—*Preparedness*. All the other world powers of to-day have realized the necessity of maintaining highly trained and organized military and naval forces in time of peace, and all, or nearly all, are allied in powerful coalitions.

Without superiority on the sea or an adequate land force there is nothing to prevent any hostile power or coalition of powers from landing on our shores such part of its trained and disciplined troops as its available transports can carry. The time required is limited only by the average speed of its vessels and the delay necessarily consumed in embarking and disembarking.

In order that the American people can intelligently decide on a doctrine of preparedness which shall constitute the military policy of the United States, and that Congress and the Executive may be able to carry out their decision, information concerning the military strength of other great nations and shipping available for transport purposes must be clearly set forth.

The work of the statesman and of the soldier and sailor are therefore coördinate; where the first leaves off the others take hold.

5. *Preparedness of the world powers for oversea expeditions.*—Control of the sea having been once gained by our adversary or adversaries, there is nothing to prevent them from dispatching an oversea expedition against us. In order to form an idea of the mobile force we should have ready to resist it an estimate must first be made of the approximate number of troops that other nations might reasonably be expected to transport and of the time required to land them on our coasts.

The number of thoroughly trained and organized troops an enemy can bring in the first and succeeding expeditions under such an assumption is a function of:

(*a*) The size of the enemy's army, and

(*b*) The number, size, and speed of the vessels of the enemy's merchant marine that can be used as transports.

Should our enemy be a nation in arms—that is, one in which all or nearly all of the male inhabitants of suitable physique are given a minimum of two years' training with the colors in time of peace (and this is true of all world powers except ourselves and England), it is evident that the size of the first expedition and succeeding expeditions would be limited only by the number of vessels in the transport fleets. It also follows that as the capacity and number of steamers in the merchant marine of any nation or group of nations increase in the future, the number of trained soldiers which such nation could send in such expedition will also increase, and our trained forces should be correspondingly augmented.

What the conditions were in August, 1914, is shown in the table on page 9, which may be regarded as a reasonable estimate.

The quality, organization, and efficiency of these troops, except those of Japan, which demonstrated their excellence in the Russo-Japanese War, are now undergoing a supreme test of military strength on land and sea. In addition, where certain nations have transported troops by sea their capabilities in this respect have to some extent been shown. This test by the ordeal of battle is visibly demonstrating their organization, their fighting power, and the rate at which each is capable of developing and maintaining its military strength.

This evidence, produced under conditions of actual warfare, presents an example of the resultant efficiency of any nation that has developed a sound military policy; the soundest policy being the one which insures *a successful termination of the war in the shortest time.*

6. *Statement of the military problem.*—From what has been stated, we are forced to the conclusion that we must be prepared to resist a combined land and sea operation of formidable strength. Our principal coast cities and important harbors have already been protected by harbor defenses which, by passive method alone, can deny to an enemy the use of *these localities* as bases for such expeditions.

The enemy being unable to gain a foothold in any of these fortified areas by *direct naval attack* will therefore be forced to find some suitable place on the coast from which land operations can be conducted both against the important coast cities and the rich commercial centres in the interior. Long stretches of coast line between the fortified places lie open to the enemy. The only reasonable way in which these localities can be defended is by providing a mobile land force of sufficient strength, so located that it may be thrown in at threatened points at the proper time.

Hence it can be seen, when we take into consideration the

PREPAREDNESS OF THE GREAT POWERS FOR OVER-SEA EXPEDITIONS

Nation.	Strength of army.	Tonnage available of ships with capacity over—			First expedition using 50 per cent. of tonnage given		Second expedition using 75 per cent. of tonnage given		Time needed to—	
		3,000 tons.	2,000 tons.	1,000 tons.	Men.	Animals.	Men.	Animals.	Load and cross ocean with first expedition.	Return load and re-cross with second expedition.
									Days.	*Days.*
Austria-Hungary	4,320,000	.....	762,756	.....	72,000	14,000	108,000	21,600	20.7	40.4
France	5,000,000	.....	1,705,931	.....	160,931	32,186	243,295	48,279	15.8	30.0
Germany	5,000,000	3,569,962	4,018,185	.....	387,000	81,270	440,000	94,600	15.8	30.8
Great Britain	[1]695,000	13,000,000	.....	.....	170,000	90,000	.....	.....	14.0	27.0
Italy	2,600,000	.....	1,065,321	.....	91,000	13,650	136,000	2,047005	18.3	35.0
Japan†	2,212,000	.....	.....	[2]1,013,985	95,745	24,416	142,622	36,623	22.5	41.0
Russia	5,000,000	.....	428,019	.....	37,630	7,940	66,444	11,918	20.5	40.0

[1] 240,500 territorials.

[2] Japanese field regulations indicate the intention to use steamers of 1,000 tons; for this reason and because of the large amount of steamers between 10 and 12 knots speed, all Japanese steamers over 10 knots speed and a thousand tons gross have been considered.

Fifty per cent. has been assumed as the figure representing the amount of shipping in or within call of home ports at outbreak of war.

NOTE.—The allowance prescribed in our Field Service Regulations of 3 tons per man and 8 tons per animal for ships over 5,000 tons and 4 tons per man and 10 tons per animal for vessels under 5,000 tons has been used in estimating the capacity of ships, except where the regulations of any country prescribe a different allowance

Fighting power is the result of organization, training, and equipment backed by the resources of the country. Available shipping is a matter of commercial statistics.

possible two months' delay provided by the Navy, that our system should be able to furnish 500,000 trained and organized mobile troops at the outbreak of the war and to have at least 500,000 more available within ninety days thereafter. Here, however, it must be pointed out that two expeditions alone will provide a force large enough to cope with our 1,000,000 mobile troops, and consequently we must at the outbreak of hostilities provide the system to raise and train, in addition, at least 500,000 troops to replace the losses and wastage in personnel incident to war.

I. The Regular Army

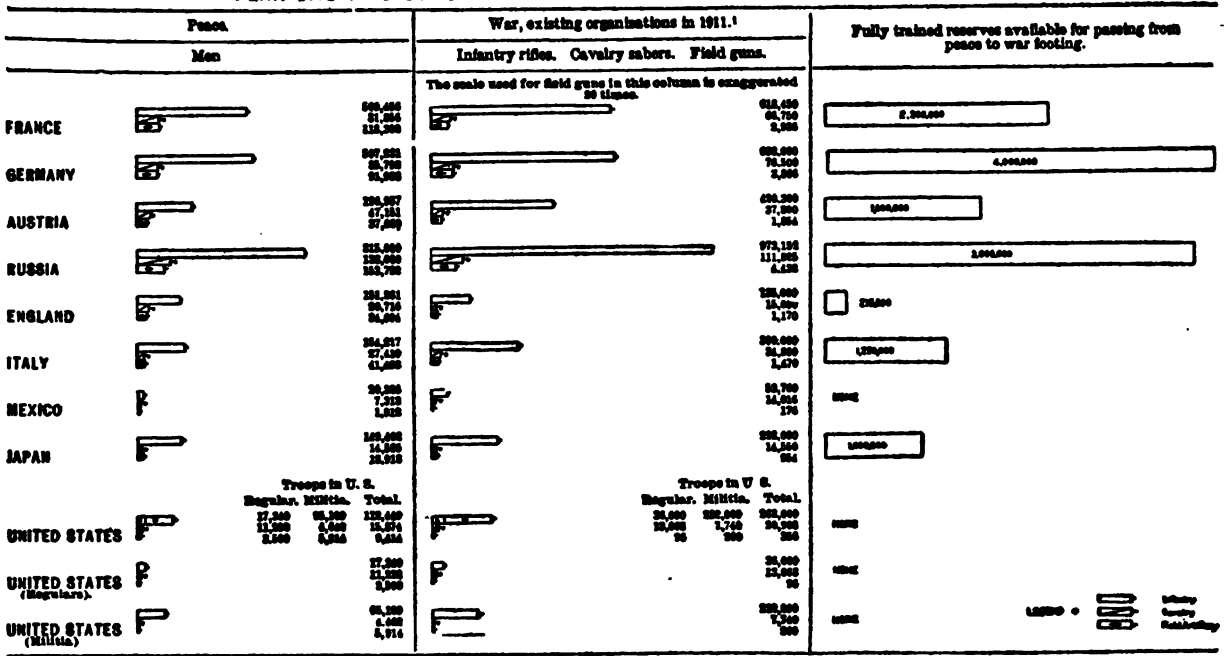
GENERAL FUNCTIONS OF THE REGULAR ARMY

7. In the endeavor to reach a just conclusion as to the strength and organization of a Regular Army, adequate to play its part in our national defense, it must not be forgotten that this defense is a joint problem requiring for its correct solution the united efforts of both Army and Navy, and that the ultimate strength of the greater war army is dependent to a considerable extent upon the part to be played by the fleet. It is therefore assumed in this discussion that the Navy is preparing to place and maintain in the Pacific, when the occasion requires, a force superior to that of any oriental nation, and, in the Atlantic, one second only to that of the greatest European naval power.

The Regular Army is the peace nucleus of the greater war army of the Nation. Its strength and organization should be determined not only by its relation to the larger force but by its own peace and war functions. It must be prepared at all times to meet sudden and special emergencies, which cannot be met by the army of citizen soldiers. Its units must be the models for the organization and training of those of the great war army.

Some of the functions of the Regular Army are:

PLAN SHOWING STRENGTH OF THE THREE ARMS IN PEACE AND IN WAR.



[1] War strengths of great European powers have been increased since 1911, but increases have not been made public.

NOTE.—In this plan only organizations existing in peace have been considered. Nearly all foreign countries have reserve organizations which are about equal in strength to the regular troops. For England the figures are for British regular troops only

(*a*) To furnish the entire strength of our garrisons outside of the United States proper both in peace and war.

(*b*) To garrison our harbor defenses within the United States proper in time of peace.

(*c*) To furnish detachments of mobile forces in time of peace sufficient for the protection of these harbor defenses and naval bases against naval raids which, under modern conditions, may precede a declaration of war.

(*d*) To furnish sufficient mobile forces to protect our principal cities by preventing the landing of hostile expeditions for their capture in the intervals between our fortified harbors or near such cities.

(*e*) To supply a mobile reserve to reënforce our garrisons outside of the United States proper during periods of insurrection and disorder.

(*f*) To furnish expeditionary forces for minor wars resulting from the occupation of foreign territory where treaty rights or fundamental national policies may have been threatened.

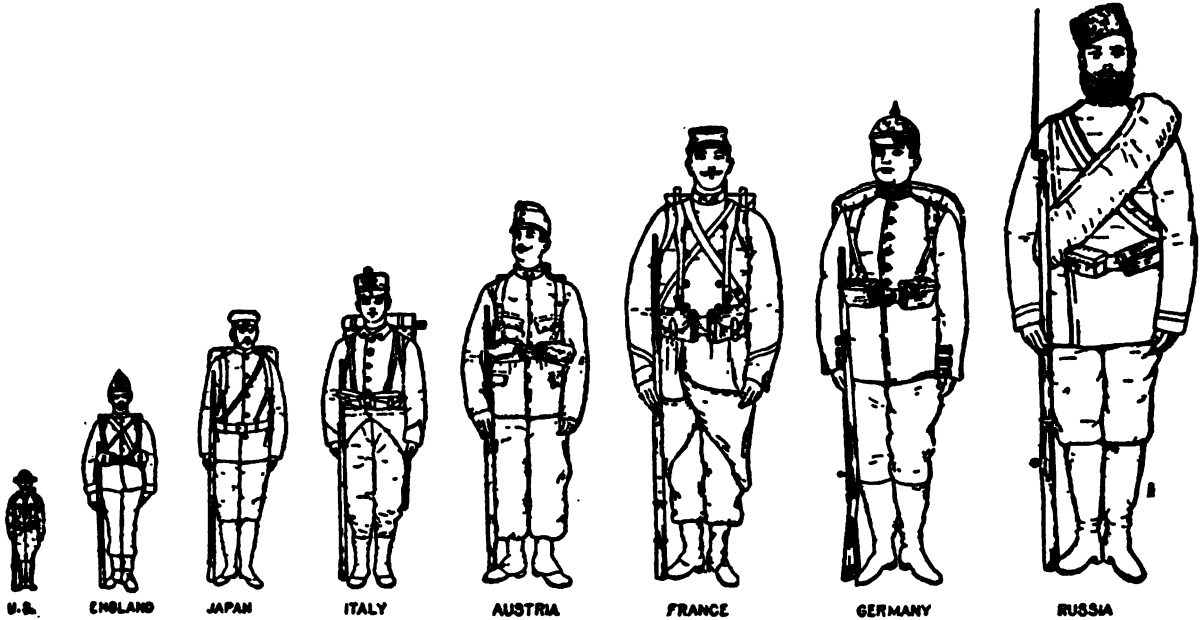
(*g*) To prepare in advance its existing administrative and supply departments for the equipment, transportation, and supply of the great war army of the Nation.

(*h*) To assist in the training of organizations of citizen soldiers.

8. Concerning the strength and organization of the Regular Army, the following points are to be considered:

(*a*) At the outbreak of war the Regular Army at home should be strong enough, with the addition of organized and trained citizen soldiers, to form the first line of defense in order to give sufficient time to permit the mobilization and concentration of our greater war army, and to seize opportunities for such immediate initial operations as may be undertaken before the mobilization of the army of citizen soldiers can be completed.

(*b*) It should be so organized and located that it can be economically and efficiently trained, quickly and easily mobilized and concentrated, and readily used as a model in the education and training of the citizen forces.



Relative Peace Strength of Infantry Forces, 1914

MOBILE AND COAST ARTILLERY TROOPS AND THEIR FUNCTIONS

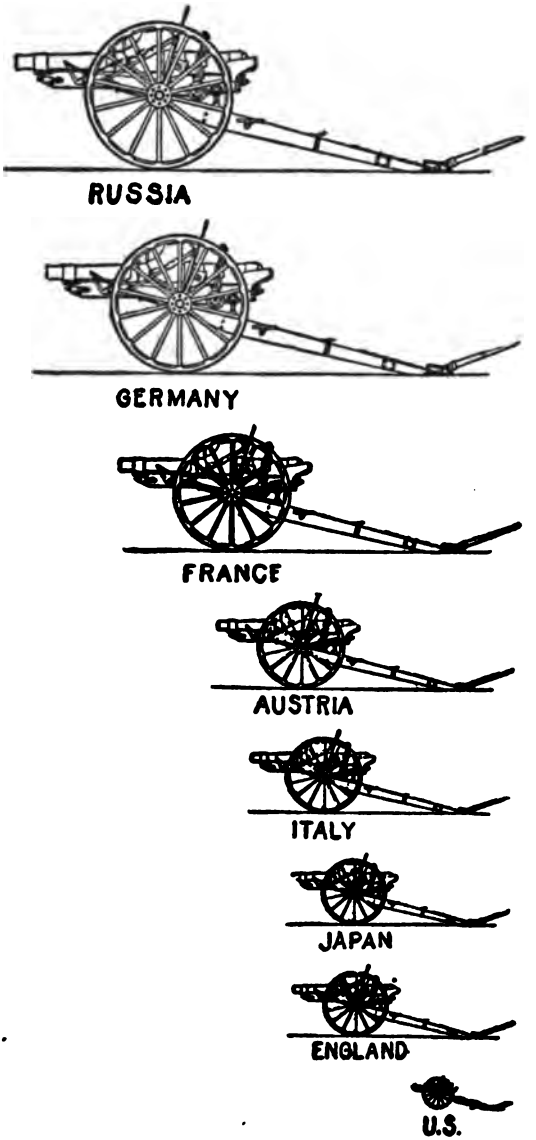
9. Experience has shown that our regular land forces and others modeled upon them must consist of two distinct classes, i. e.:

(*a*) Mobile troops.

(*b*) Coast Artillery troops.

These two groups have their own special functions for which they are trained and equipped and from which they should not be diverted except in some emergency.

The function of the Coast Artillery is to man our harbor defenses designed to protect important seaports from direct naval attacks and raids from the sea. The armament and accessories of these forts are intended to be so complete and powerful as not only to prevent hostile landings at all places within range of the guns, but also to cover all navigable waters in the vicinity of great seacoast cities so thoroughly as to leave no dead spaces from which enemy ships, either at anchor or during a run-by, could bring them under bombardment. While these harbor forts are important elements in our scheme of defense, they are, nevertheless, powerless to prevent invasion at points outside the range of their guns. The total length of our coast line is enormous (over 5,000 miles, not including Alaska), and the stretches covered by harbor defenses are and must remain very small compared with the unprotected intervals that lie between them. If we should lose command of the sea an invader would simply land in one of these intervals. It therefore follows that the ultimate defense of our coasts depends upon defeating a mobile army of invasion, and this can be done only by having mobile forces prepared to operate in any possible theatre of war. At this stage of hostilities the problem becomes one of coöperation between Coast Artillery and mobile troops, but there can be no fixed relation in the strength of these two classes of land forces. The necessary strength of Coast Artillery troops depends upon the number and character of harbor



Relative Peace Strength of Field Artillery, 1914

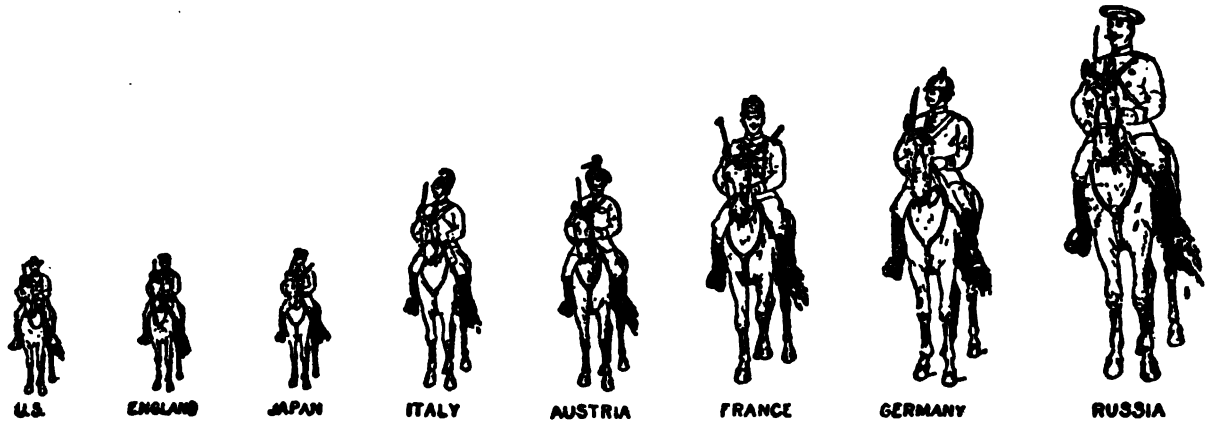
defenses established; that of mobile troops upon the nature and extent of the defensive and offensive operations for which the Nation decides to be prepared.

RELATION BETWEEN HOME AND OVERSEA GARRISONS

10. The most rational method of determining the proper strength and organization of the Regular Army is based upon the fact that this force is and must be divided into two distinct parts—one for oversea service, the other for home service. Each of these parts must have its proper quota, both of mobile and Coast Artillery troops.

The troops on oversea service consist of the detachments required to meet the special military problems of the Philippines, Oahu, Panama, Alaska, Guantanamo, and Porto Rico. Each of these detachments has a distinct tactical and strategic mission, and is to operate within a restricted terrain. All of them are limited to oversea communication with the home country, and all of them may therefore be isolated for considerable periods, especially in the critical first stages of war. It is obvious that under these circumstances these detachments should be prepared to meet all military emergencies until reënforcements from the United States can reasonably be expected. They must, therefore, be maintained at all times at full statutory strength, and must, in addition, be organized with the view to being self-supporting, preferably during the continuance of war, or at least until the Navy has accomplished its primary mission of securing the command of the sea.

The force at home is on an entirely different basis. It may or may not be given an adequate strength in time of peace, but it is supported by all of the resources of the Nation. It may be increased at the pleasure of Congress, and it may be reënforced by considerable forces of citizen soldiery. It follows from these considerations that the military establishment of the United States in time of peace should first provide effective and suffi-



Relative Peace Strength of Cavalry Forces, 1914

cient garrisons for the political and strategic outposts of the United States, and that the residue at home should be organized with the view to ultimate expansion into such war forces as national interests may require.

GENERAL REQUIREMENTS OF OVERSEA SERVICE

11. *The Philippines.*—A decision to defend the Philippines against a foreign enemy is a matter of national and not of military policy. But in studying the military requirements of such defense it must be remembered that, under conditions of modern warfare, unless our Navy has undisputed control of the sea, we cannot reënforce the peace garrison after a declaration of war or while war is imminent.

12. *Oahu.*—The maintenance of the naval base at Pearl Harbor, Oahu, is an essential factor in the military problem of holding the Hawaiian Islands. These islands constitute a vital element in the defense of the Pacific coast and in securing to ourselves the full value of the Panama Canal as a strategic highway between the two oceans.

The problem of holding the Hawaiian Islands can be solved by making Oahu, and therefore Pearl Harbor, secure against all comers. A satisfactory solution requires the joint action of the Army and Navy. Pearl Harbor and Honolulu are already protected from direct naval attack by fortifications now nearing completion. These, while deemed adequate to meet the conditions existing when they were designed, must now be strengthened to meet the recent increase in power of guns afloat; but no matter how complete these harbor fortifications on the southern coast of Oahu may be, they are unable to prevent attacks either on the remaining hundred miles of coast lying beyond the range of their guns or on the other islands of the group. Consequently there should be in addition a force of modern submarines and destroyers forming part of the permanent naval

equipment of Pearl Harbor with sufficient radius of action to keep the Hawaiian waters thoroughly patrolled throughout their whole extent and to make them dangerous for enemy vessels. Should this force be worsted in combat and withdrawn before the arrival of our high-sea fleet, the complete control of the local waters might pass temporarily to the enemy, so that the ultimate security of both Honolulu, the naval base at Pearl Harbor, and indeed of the whole group, depends upon including in the Oahu garrison enough mobile troops to defeat any enemy that may land anywhere on the island. It is clear that perfect coördination between the Army and Navy at this station is absolutely essential to success in holding this key to the Pacific. Unless we provide such dual defense of the Hawaiian Islands we cannot be sure of retaining control even of that part of the Pacific lying within the sphere of defense of our western coast. By making such provision the high-sea fleet is left free to seek out the enemy fleet in Pacific waters.

13. *Panama.*—The Panama Canal is a very important strategic position which it is our duty to hold. By our control of this highway between the two oceans the effectiveness of our fleet and our general military power is enormously increased. It is therefore obvious that the unquestioned security of the canal is for us a vital military need. The permanent garrison should be strong enough to guard the locks, spillways, and other important works and to prevent a naval attack which, under modern conditions, may even precede a declaration of war. We should therefore be able, even in peace, to man the seacoast guns and mine defense that cover the approach to the canal, and we must have enough mobile troops to defeat raids. *A modern fleet might land a small raiding party of several thousand bluejackets at any one or more of a number of places, and such a force landing out of range of the seacoast guns could, if unopposed, penetrate to some vulnerable part of the canal within a few hours.* The permanent garrison should therefore include a mobile

force strong enough to anticipate and defeat naval raids at the beginning of hostilities and to protect the canal against more serious land operations liable to be undertaken later. If the enemy is operating on one ocean only, it might be possible to send reënforcements from the United States, but to count on such relief would be running too great chances. By authority of the Republic of Panama, this garrison is given facilities in time of peace to operate beyond the Canal Zone in order that the troops may be properly trained for their special mission and made familiar with the terrain over which they may be called upon to operate in defending the canal.

14. *Guantanamo.*—The policy of the United States contemplates the establishment of a naval base at Guantanamo. Garrisons of coast artillery and mobile troops are necessary for its defense and should be assigned to station there at the proper time.

15. *Alaska.*—The garrison of Alaska should be large enough to support the authority of the United States, and, in time of war, to maintain our sovereignty over a small selected area of the territory. As work on the Alaskan Railroad progresses, the military needs of Alaska will increase.

16. *Porto Rico* is to be classified with the Philippines and Guam. Unlike Alaska and Hawaii, these island possessions have not been organized as territories; nevertheless, they all belong to the United States and must be protected.

GENERAL REQUIREMENTS OF HOME SERVICE

17. *General distribution of Coast Artillery troops in fortified areas.*—Coast Artillery stations should correspond to the fortified areas on the seacoast, indicated by the position of the harbor defenses. [See military map.]

18. *General distribution of mobile troops in strategic areas.*—To provide harbor defenses without mobile forces necessary

to cover the unprotected intervals that lie between them would be comparable with attempting to make a house burglar proof by barring the doors and leaving the windows open. There is not a case in history where seacoast fortifications, efficiently manned, have been captured by direct attack from the sea. In all cases of capture mobile land forces have been employed for the purpose, and an enemy that hopes for success must undertake landing operations against us.

19. *Puget Sound area.*—Western Washington is bordered on the east by the steep and rugged Cascade Mountains, on the south by the Columbia River, and on the north by Juan de Fuca Strait and Canada. This corner of the United States is completely cut off from the rest of the country by great natural obstacles and presents an extensive front for attack by sea. *While the maps show some twenty passes across the Cascade Mountains, communication with the east is almost entirely by three railroads, all crossing at points less than 50 miles apart and having tunnels or other vulnerable structures. The only practicable wagon road is effectually closed to traffic for between four and five months each year by heavy snows. Communication with the south is by one line of railroad, crossing the Columbia River by bridge at Vancouver.* Communication between this section and the east and south is thus largely dependent upon a number of structures readily destroyed by high explosives, and impossible of restoration to traffic within a definite time. The two railroads along the Columbia River, at the point where it breaks through the mountains, could be easily wrecked so as to require considerable time to repair, and the gorge could be held by a small force against a large one coming from the east. If an enemy succeeds in entering western Washington and in seizing and destroying the important bridges and tunnels, he would be so securely established as to render it extremely difficult to dislodge him. *In this rich region an invader could maintain himself indefinitely.* The harbor defenses maintained in this region are reasonably strong. Ordinary precaution demands that a

mobile force of reasonable strength be also maintained in this region.

20. *California area.*—There are five transcontinental lines of railway entering California. The Western Pacific and Southern Pacific by the passes through the Sierras northeast of Sacramento; the Atchison, Topeka & Santa Fé, and the San Pedro, Los Angeles & Salt Lake via Daggetts Pass northeast of Los Angeles; and the Southern Pacific via the Salton Sea and Gorgonia Pass southeast of Los Angeles. There are no other passes through the Sierras that have been considered practicable. There is no railroad running south into Lower California. Only one railroad, the Southern Pacific, runs north into Oregon. As in the Puget Sound region, communication with the east is largely dependent upon structures readily destroyed by explosives and impossible of restoration to traffic within a definite time; California and the greater centres of population are separated by wide expanses of sparsely settled country. *To transport promptly large bodies of troops into California would be difficult if not impossible in face of opposition at the passes.* The invader would have a most fertile region at his back, while the reverse would be the situation with us.

The harbor defenses maintained in this region are reasonably strong, but they are of little use unless supported by a reasonably strong mobile force maintained in this region.

To rely, for defense, during the first stages of a war upon a mobile force shipped in from the east is to invite disaster.

21. *Atlantic area.*—In case of war with a first-class power on the Atlantic, that portion of our country lying between and including Maine and Virginia would undoubtedly be the primary object of an invader. While all other points along the Atlantic and Gulf coasts and all points on our land frontiers would undoubtedly be in danger, the danger would be secondary to that of the North Atlantic States above named. Here, also, the harbor defenses are reasonably strong, and here, also, a mobile

force should be kept sufficient in size to hold important points until the citizen soldiery can be mobilized.

While many other regions are important, the three regions described—Puget Sound, California, and the North Atlantic States—contain the critical areas.

22. *Middle West area.*—The centre of population of the United States is in the middle west, and here should be located a mobile force for use in case of need, on either the Pacific or Atlantic coast, the northern or southern border.

V. Reserve Matériel

47. In a war of gigantic proportions the chances of success are immeasurably lessened by wastage, abuse, and confusion. Steps should be taken looking toward a national organization of our economic and industrial resources as well as our resources in fighting men.

49. The lack of such articles as shoes, wagons, harness, rifles, saddles, medical chests, and so on, will render ineffective an army just as certainly as will the lack of ammunition.

52. A fully trained force, to be effective during the critical period when war is imminent and during the first few weeks of a war, must not be hampered by lack of necessary supplies and equipment. For this reason, supplies of all kinds which cannot be obtained in the open market at any time must be kept on hand, in use and in store, at home and oversea, sufficient to equip without delay all troops whose training warrants sending them promptly into the field.

59. In order that the efforts of the various supply bureaus may be properly coördinated by the Chief of Staff, reserve supplies should be collected in *general* supply depots located in accordance with the general principle below enumerated. Each general supply depot should be considered a place of issue in time of peace for all articles of field equipment, so that the stock on hand will be continually turned over and the machinery

for the issuing and forwarding of supplies will be in operation at the outbreak of war. The commander of each general supply depot should be either a line or a staff officer specially selected by and reporting direct to the Chief of Staff and independent of the control of any one particular staff department but keeping in touch with all. The commander of each general supply depot should be assisted by the necessary commissioned, enlisted, and civilian personnel. Supplies for not more than three division units should be stored at any one locality. Each place selected for a reserve storehouse should be one that will be at all times under adequate military protection, where ground is available and where abundant railroad facilities exist.

60. As a general military principle, no supply depot, arsenal, or manufacturing plant of any considerable size, supported by War Department appropriations for military purposes, should be established or maintained east of the Appalachian Mountains, west of the Cascade or Sierra Nevada Mountains, nor within 200 miles of our Canadian or Mexican borders, and steps should be taken gradually to cause to be moved depots and manufacturing plants already established in violation of this military principle.

61. Estimated cost of the field equipment of one Infantry division, and one Cavalry division, is as follows:

	Can be obtained in the open market in great quantities at any time.	Can be obtained on 15 days' notice.	Can be obtained on 3 months' notice.	Cannot be obtained on 3 months' notice.
Infantry:				
Signal supplies	$ 722.12	$ 1,688.51	$ 6,030.46	$ 385,310.26
Quartermaster supplies	51,983.35	54,054.45	3,177,083.47	.....
Engineer supplies	.....	.....	.....	.....
Ordnance supplies	5,779.67	7,730.96	257,489.89	4,164,770.68
Medical supplies	10,997.95	10,189.63	88,861.51	.....
Cavalry:				
Signal supplies	$ 370.80	$ 1,638.53	$ 4,290.61	$ 277,156.43
Quartermaster supplies	55,102.48	76,143.40	4,584,628.93	.....
Engineer supplies	.....	.....	.....	.....
Ordnance supplies	31,862.02	18,630.56	311,056.68	3,541,004.68
Medical supplies	13,454.99	13,060.57	108,630.36	.....

62. While the amount of money involved is large, practically all of it will remain at home, especially if every effort be made by the supply bureaus to eliminate from supply tables all articles not of domestic manufacture. It must also be kept in mind that it is cheaper to buy war supplies in time of peace than in time of war.

The remainder of this Statement of a Proper Military Policy for the United States is devoted to a discussion as follows:

Part II. The Organized Militia.
Part III. Reserves.
Part IV. Volunteers.

"I am very much pleased with the increased interest in the military preparation and needs of our country lately taken not only by the students of Yale University but by students of many other universities and colleges and by the educated people throughout the country. I am sure that, if our citizens only knew more about the subject of national defenses, and the ways and means vital and necessary to be properly prepared, the War Department would not have to beg consideration of its projects, but the people themselves would demand their carrying out. I believe it is the duty of all true citizens of our country to familiarize themselves with this subject, as upon the mere fact whether or not the country is adequately prepared for war may depend the continued peace and prosperity of the nation and even their own lives as well.

"The subjects of military policy, military organisation, and the true military history of our country should be included in the university and college curriculum. This is necessary to the complete education of a well equipped citizen in order that he may form just and true opinions on military subjects and be able to judge for himself just what is necessary in this respect for the proper safeguarding of the nation and the means to effect same."—Hon. Lindley M. Garrison, Secretary of War, at Yale University.

CHAPTER II

THE UNITED STATES ARMY

CONGRESS meets its constitutional obligation "to provide for the common defense," by creating and maintaining land and naval forces, i.e., the Army and the Navy.

The President is the constitutional Commander-in-chief of both forces. He places parts of the Army and separate armies under commanders, subordinate to his general command. The President exercises this command through the Secretary of War and the Chief of Staff. The Secretary of War directly represents the President and acts in conformity to his policies. Under the law his acts, orders, and instructions are the acts, orders, and instructions of the President.

The rules and regulations governing the Army are promulgated to it in the following language: "The President of the United States directs that the following regulations for the Army be published for the government of all concerned, and that they be strictly observed. Nothing contrary to the tenor of these regulations will be enjoined in any part of the forces of the United States by any commander whomsoever."

These regulations comprise 123 Articles of War and 1,573 paragraphs of regulations covering every phase of military routine.

Officers and enlisted men subscribe to an oath to bear true faith and allegiance to the United States of America; to serve them honestly and faithfully against all their enemies whomsoever; and to obey the orders of the President of the United States, and the orders of the officers appointed over them according to the rules and articles of war.

The military system of the United States is based upon voluntary enlistment in a small standing Army and upon Volunteers and National Guard as occasion may require.

The original Army in 1790 consisted of infantry, cavalry, and artillery, aggregating 1,273 troops or one soldier to 3,100 population. This ratio is now one soldier to 900 population. Auxiliary forces and non-combatant troops have been included in the Army from time to time to meet the advances in the Art and Science of Warfare until to-day, in addition to infantry, cavalry, and artillery, our Army is composed of the various Administration, Staff, Supply, and Sanitary Departments and troops and the Coast Artillery Corps, Engineer Corps, Signal Corps, and Aviation Section.

Recent legislation for preparedness for the National Defense is the harbinger of a new military system destined to place this country on a basis of adequate military preparedness unless our population again relax into chicken heartedness and indifference toward the vital elements of Nationhood.

The Army is undergoing many radical changes to meet the requirements of the Army Reorganization Act approved June 3, 1916. The Army of the United States by this Act consists of the Regular Army, the Volunteer Army, the Officers' Reserve Corps, the Enlisted Reserve Corps, the National Guard while in the service of the United States, and such other land forces as are now or may hereafter be authorized by law.

The actual peace strength and organization of the Regular Army, prior to the Columbus Raid was approximately as set forth in the table on page 28. Following this raid, Congress by resolution authorized an increase of 20,000 enlisted men. A Punitive Expedition entered Mexican territory in pursuit of these military bandits.

The National Defense Act of June 3, 1916, contemplates an organization, strength, tactical units and disposition of troops approximately as set forth in the table on reverse of military and naval map in pouch of cover.

AUTHORIZED PEACE STRENGTH OF THE REGULAR ARMY AT DATE OF "COLUMBUS RAID," MARCH 9, 1916

	Generals	Lt. Generals	Major generals.	Brigadier generals.	Colonels.	Lieutenant colonels.	Majors.	Captains.	First lieutenants.	Second lieutenants.	Chaplains	Total commissioned officers.	Enlisted men.
General officers	0	0	7	17	.....	.....	.....	.....	.....	.....	.....	24	.....
Adjutant General's Department	...	...	.....	1	5	7	10	.....	.....	.....	.....	23	.....
Inspector General's Department	...	...	.....	1	3	4	9	.....	.....	.....	.....	17	.....
Judge Advocate General's Department	...	...	.....	1	2	3	7	.....	.....	.....	.....	13	.....
Quartermaster Corps	...	...	1	2	12	18	48	102	.....	.....	.....	183	6403
Medical Department	...	...	1	....	14	24	105	230	*b*215	.....	.....	*b*598	(*c*)
Corps of Engineers	...	...	.....	1	15	22	51	60	56	43	1	249	1,042
Ordnance Department	...	...	.....	1	6	9	19	25	25	.....	.....	85	705
Signal Corps	...	...	.....	1	1	2	6	22	74	.....	.....	106	1,472
Bureau of Insular Affairs	...	...	.....	1	1	.....	1	.....	.....	.....	.....	3	.....
Fifteen regiments of Cavalry	...	...	.....	.....	15	15	45	225	225	225	15	765	14,148
Six regiments of Field Artillery	...	...	.....	.....	6	6	12	66	78	78	6	252	5,535
Coast Artillery Corps	...	...	.....	1	14	14	42	210	210	210	14	715	19,019
Thirty regiments of Infantry	...	...	.....	.....	30	30	90	450	450	450	30	1,530	35,339
Porto Rico Regiment of Infantry	...	...	.....	.....	.....	.....	.....	11	10	10	1	32	599
Military Academy	...	...	.....	.....	4	3	.....	.....	.....	.....	.....	7	632
Detached officers	...	...	.....	.....	8	9	27	82	74	.....	.....	200	.....
Additional officers	...	...	.....	.....	25	1	.....	.....	1	.....	.....	27	.....
Recruiting parties, recruit depots, and unassigned recruits	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,098
Service-school detachments	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	746
United States Disciplinary Barracks Guards	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	350
With disciplinary organizations	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	110
Mounted orderlies	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7
Indian scouts	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	75
Total Regular Army	0	0	9	27	161	167	472	1,492	1,418	1,016	67	4,829	87,240
Additional force:													
Philippine Scouts	...	...	.....	.....	.....	.....	.....	52	65	65	.....	182	5,733
Grand total	0	0	9	27	161	167	472	1,544	1,483	1,081	67	5,011	92,973

a Under the act of Congress approved Aug. 24, 1912, the 6,000 authorized enlisted men of the Quartermaster Corps are not to be counted as part of the strength of the Army.

b Includes 94 first lieutenants of the Medical Reserve Corps on active duty and 60 dental surgeons.

c Under the act of Congress approved Mar. 1, 1887 (24 Stat. L., 435), the enlisted men of the Medical Department (Hospital Corps) are not to be counted as part of the strength of the Army. The authorized strength of the Hospital Corps is 4,012 enlisted men.

THE OFFICERS' RESERVE CORPS

For the purpose of securing a reserve of officers available for service as temporary officers in the Regular Army, as officers of the Quartermaster Corps, as officers of other Staff Corps and Departments, as officers for Recruit Rendezvous and Depots, and as officers of Volunteers, there is being organized under this act an Officers' Reserve Corps of the Regular Army.

This Corps will consist of sections corresponding to the various arms, staff corps, and departments of the Regular Army. Its members are not subject to call for service in time of peace. The President appoints and commissions these officers for periods of five years in all grades up to and including that of Major from such citizens as shall be found physically, mentally, and morally qualified to hold such commissions. All persons now duly qualified and registered for commissions in the Volunteer Army are eligible for a period of three years for appointment in the Officers' Reserve Corps without further examination except a physical examination.

On June 3, 1917, the Medical Reserve Corps as now constituted by law will cease to exist. Members thereof may then be commissioned in the Officers' Reserve Corps.

In time of threatened or actual hostilities the President may order officers of the Officers' Reserve Corps to temporary active duty.

The Secretary of War is authorized to order Reserve Officers to duty with troops or at field exercises or for instruction for periods not to exceed fifteen days of any calendar year, and while so serving such officers receive the pay and allowances of their respective grade in the Regular Army. With the consent of the Reserve Officers, and within the limit of funds available for the purpose, such periods of duty may be extended by the Secretary of War.

The President has authority to establish and maintain in civil educational institutions a Reserve Officers' Training Corps

consisting of a senior division at universities and colleges and military schools under certain restrictions and a junior division at other educational institutions.

Military instruction and training by Army officers is greatly extended by this Act, with a view to supplying the thousands of additional officers required in time of war.

The President is also authorized to appoint and commission certain Reserve Officers as temporary Second Lieutenants of the Regular Army for purposes of instruction for a period not to exceed six months with allowances of a Second Lieutenant but with pay of only $100 per month.

MILITARY TRAINING CAMPS

The Secretary of War is authorized to maintain upon military reservations or elsewhere camps for military instruction and training of such citizens as may be selected upon their application and under terms of enlistment and regulations prescribed by him.

THE ENLISTED RESERVE CORPS

For the purpose of securing an additional reserve of enlisted men for military service with the Engineer, Signal, and Quartermaster Corps and the Ordnance and Medical Departments of the Regular Army, an Enlisted Reserve Corps is provided for to consist of such number of enlisted men of such grade or grades as may be designated by the President.

Service in the Enlisted Reserve Corps is for periods of four years between the ages of 18 and 45 years. Membership is contingent upon passing a satisfactory physical, educational, and practical examination and is by certificate issued by the Adjutant General of the Army. Members and those who have attended at least one encampment for the military instruction of citizens are furnished free a rosette or knot to wear with civilian clothing.

This membership offers an attractive and beneficial associa-

tion and attendance at summer camp of instruction at the expense of the government.

The various branches of service, Staff Corps, rank of officers, and grade of enlisted men are distinguished by color of facings, style of uniform, collar ornaments, cap and hat devices, braid and chevrons of sleeve, etc. The proper uniform, military medals, badges, etc., for various occasions is set forth in uniform regulations.

The important marks of distinction except as to the distinguishing color of facings, etc., are illustrated in table of Army organization (see separate chart).

The President, in July, 1916, called out the Militia and the Army Reserves for emergency duty along the Mexican border. This mobilization has been most timely in determining the exact condition of the National Guard as to equipment, physical condition, and proficiency as well as the insignificance of the present Army Reserve.

The actual strength of the Army and ratio of soldiers to population and the cost of maintaining the War Department are set forth in the following tables by courtesy of Frederic Louis Huidekoper, historian, and author of "The Military Unpreparedness of the United States," pages 276-278.

Year	Population of the United States	Actual strength of the Regular Army	Number of soldiers per 1,000 of population
1790	3,929,214	1,273	0.324
1800	5,308,483	4,436	0.833
1810	7,239,881	9,921	1.378
1820	9,633,822	8,942	0.927
1830	12,866,020	5,951	0.462
1840	17,069,453	10,570	0.602
1850	23,191,876	10,763	0.421
1860	31,443,321	16,367	0.520
1870	38,558,371	37,075	0.963
1880	50,155,783	26,509	0.527
1890	62,947,714	27,095	0.430
1900	76,303,387	68,155	0.895
1910	93,402,151	77,035	0.825

Period	Condition	Cost
1791–1811	Peace	$ 5,669,930.65
1812–1816	Including the War of 1812	82,627,009.14
1817–1835	Minor Indian Wars. Army averaging under 6,000 officers and men	90,411,068.59
1836–1843	Florida War	69,751,611.11
1843–1845	Peace, the Army reduced	13,873,146.89
1846–1849	Including the Mexican War	88,500,208.38
1850–1860	Peace, the Army reduced	168,079,707.57
1861–1865	Including the War of the Rebellion	2,736,570,923.50
1866–1869	Forces large on account of French occupation of Mexico	583,749,510.99
1870–1897	Peace. The Army reduced	1,211,321,300.94
1898–1899	Including the Spanish-American War	321,833,254.76
1900–1902	Including the Philippine War	391,662,681.06
1902–1914	Peace. The Army reduced	1,693,920,509.96
	Total cost since 1790	$7,457,970,863.54
	Total cost to pensions since 1790 to 1914	$4,729,957,370.94

"Militarism is not determined by chance or circumstances, but by the definite policy of a state seeking world power and world domination. It is a sad commentary upon the spirit of our nation if we must refuse to possess ourselves of power for fear that in the possession we may prostitute that power to unworthy and ignoble ends. If this is true of our country at large, then no individual in our land should be entrusted with power in our business, professional, political, or social life. The glory of power is revealed through restraint. I have sufficient confidence in the spirit of our Nation, in our traditions of justice, in our moral integrity, in the sincerity of our public pledges, in the freedom from the mania of imperial power and territorial acquisition, so that I have no fear that our Nation will ever be betrayed by the false ambition of militarism to wage an unjust and unrighteous war in an unworthy cause."—Dr. John Grier Hibben, President of Princeton University, in the February, 1916, issue of *American Defense*, published for the American Defense Society.

CHAPTER III

THE WAR DEPARTMENT AND THE SECRETARY OF WAR

THE Secretary of War, directs the affairs of the War Department as a member of the President's Cabinet. He is directly responsible to the President for the efficiency of the military establishment, the proficiency of the organizations that make up the Army.

He supervises estimates for army appropriations, purchases of army supplies and expenditures for the support, transportation, and maintenance of the army, and for certain civil appropriations including the Panama Canal and River and Harbor improvements, in all exceeding $300,000,000 for the fiscal year 1916-17.

He has supervision of the United States Military Academy and military education in the Army, of the Board of Ordnance and Fortifications, of the various battlefield commissions and publication of the Rebellion records.

He has charge of all matters relating to National Defense and Seacoast Fortifications, Army Ordnance, the prevention of obstruction to navigation, the establishment of harbor lines and all plans and locations of bridges, authorized by Congress, over navigable waters, and of the establishment or abandonment of military posts.

ASSISTANT SECRETARY OF WAR

To the Assistant Secretary of War is assigned the general direction and supervision of all matters relating to rivers and har-

bors; bridges over navigable waters of the United States; leases, revocable licenses and all other privileges upon lands under the control of the War Department; inspections relating to the military establishment; recruiting service; discharges, commutation of rations, court-martial, and other questions relating to enlisted men, including clemency cases and matters relating to prisoners at the Disciplinary Barracks and penitentiaries. He has charge of routine matters relating to the militia; the promotion of rifle practice; the supervision of miscellaneous claims and accounts; matters relating to national cemeteries, boards of survey, open-market purchases, and medals of honor.

In the absence of the Secretary of War, the Assistant Secretary of War acts in his place. In the absence of both the Secretary of War and the Assistant Secretary of War, the Chief of Staff acts as Secretary of War for a period not to exceed thirty days, by direction of the President.

ASSISTANT AND CHIEF CLERK

The Assistant and Chief Clerk of the War Department has charge of the records and files, the supervision of the receipt, distribution, and transmission of the official mail and correspondence of that office, and is charged with the administrative action required by law to be taken in connection with the settlement of disbursing officers' accounts that do not relate to the different staff corps of the Army. He has general supervision of matters relating to civilian employees in and under the War Department; the printing, binding and advertising; the department's telegraph and telephone service, stationery and rental of buildings.

The annual reports of the Secretary of War, Hon. Lindley M. Garrison, for the years of 1914–15 set forth many interesting facts concerning the prevailing conditions in the Army and the military policy.

A large part of the Army has been occupied in actual field ser-

vice in Galveston, Vera Cruz, all along the Mexican-U. S. border and in Colorado and Arkansas. The health reports of the Army during these years show a reduction of nearly twenty per cent. in the non-effectives from sickness and injury.

A number of officers were sent to Europe at the outbreak of the War to aid American refugees in getting home, and as military observers and attachés.

The Students' and Business Men's Camps of Instruction are reported as being very successful, and undoubtedly can and will develop as an important military asset to the country.

In 1914 a complete organization of the government of the Canal Zone was put into effect, Major General George W. Goethals being continued as Governor. The canal was opened for business in 1916.

As to a military policy for the U. S. the following is quoted: "Every one desires peace, just as every one desires wealth, contentment, affection, sufficient means for comfortable existence and other similarly beneficent things. But peace and the other states of being just mentioned are not always or even often solely within one's own control. Those who are thoughtful and have courage face the facts of life, take lessons from experience and strive by wise conduct to attain the desirable things and by provision and precaution to protect and defend them when obtained. It may truthfully be said that eternal vigilance is the price which must be paid in order to obtain the desirable things of life and to defend them.

"In collective affairs the interest of the group are confided to the Government and it thereupon is charged with the duty to preserve and defend these things. The Government must exercise for the Nation the precautionary, defensive, and preservative measures necessary to that end. All governments must therefore have force—physical force—i.e., military force, for these purposes. The question for each Nation when this matter is under consideration is, how much force should it have and of what should that force consist?

"In the early history of our Nation there was a natural, almost inevitable, abhorrance of military force, because it connoted military despotism. *Most, if not all, of the early settlers in this country came from nations where a few powerful persons tyrannically imposed their will upon the people by means of military power. The consequence was that the oppressed who fled to this country necessarily connected military force with despotism and had a dread thereof. No reasonable person in this country to-day has the slightest shadow of fear of military despotism nor of any interference whatever by military force in the conduct of civil affairs.* The military and the civil are just as completely and permanently separated in this country as the Church and the State are, the subjection of the military to the civil is settled and unchangeable. The only reason for reverting to the obsolete condition is to anticipate the action of those who will cite from the works of the founders of the Republic excerpts showing a dread of military ascendancy in our Government. At the present time such expressions are entirely inapplicable and do not furnish even a presentable pretext for opposing proper military preparation.

"It also seems proper in passing to refer to the frame of mind of those who use the word 'militarism' as the embodiment of the doctrine of brute force and loosely apply it to any organized preparation of military force and therefore deprecate any adequate military preparation because it is a step in the direction of the contemned 'militarism.' It is perfectly apparent to any one who approaches the matter with an unprejudiced mind that what constitutes undesirable militarism as distinguished from a necessary, proper, and adequate preparation of the military resources of the Nation depends upon the position in which each nation finds itself and varies with every nation and with different conditions in each nation at different times. Every nation must have adequate force to protect itself from domestic insurrections, to enforce its laws and to repel invasions. The Constitution obligates the United States to protect each state

against invasion. If it prepares and maintains more military force than is necessary for the purposes just named, then it is subject to the conviction, in the public opinion of the world, of having embraced 'militarism,' unless it intends aggression for a cause which the public opinion of the world conceives to be a righteous one. To the extent, however, that it confines its

5½ ft. fly; 4½ ft. hoist
Colors of the Secretary of War
Scarlet Silk, Blue Coat of Arms, White Stars
Colors of the Assistant Secretary of War
White Silk, Blue Coat of Arms, Red Stars

military preparedness to the purpose first mentioned there is neither warrant nor justification in characterizing such action as 'militarism.'

"Unless this Nation has reached the conclusion that it has no

need for the preparation of its military resources for the purposes enumerated, then we must earnestly address ourselves to the question of such proper preparation.

"In continental United States we have a territory consisting of 3,026,789 square miles, with a population of 98,781,324. In Alaska we have 590,884s quare miles with a population of 64,356. Our other territorial responsibilities which must be considered are: the Panama Canal, where, although the population is small, we have an investment of $400,000,000 and the destruction of which waterway would be an international calamity; Hawaii, with 6,449 square miles and a population of 191,909; Porto Rico, with 3,606 square miles and a population of 1,118,012; the Philippine Islands, with 127,800 square miles and a population of 7,635,426 together with certain other islands not necessary to be considered in this connection.

"By intensive military training any young man of good health and average mentality can be made a serviceable soldier in twelve months and in fact has been so made.

"I am not so much concerned with the length of enlistment, provided the Secretary of War is given the power to discharge into the reserve at the end of twelve months those who have shown themselves proficient up to a required standard.

"I am convinced with equal firmness that we should adopt some one or more of the methods which have been suggested for the training of more civilians to become officers in case of necessity. The potentiality of the student military camps and of the schools and colleges at which military training is obtainable suggests a fruitful source of accomplishing this purpose.

"If we are authorized to use this exceedingly valuable nucleus to produce the reserve needed, there never was a time when the experiment had so great a chance of success as now. Both the enlisted personnel and the officers furnish a school of unexampled excellence for just such work."

The functions of the Secretary of War as relate to the supply, payment, and recruitment of the Army, and direction of the ex-

penditures of the appropriations for its support; the determination where and how particular supplies shall be purchased, delivered, inspected, stored, and distributed are exercised through the Chief of Staff and Staff Bureaus of the War Department.

The Staff Bureaus are the General Staff Corps, The Chief of Staff, the Adjutant General's Department, the Inspector General's Department, the Judge Advocate General's Department, the Quartermaster's Corps, the Medical Corps, the Engineer Corps, the Ordnance Department, the Signal Corps, the Bureau of Insular Affairs, and the Militia Bureau. These Bureaus have offices in the State, War and Navy building at Washington.

The Chiefs of the Bureaus are selected by the President for periods of four years. They have the rank of Brigadier General, except the Chief of Staff, the Chief of Coast Artillery Corps, the present Chiefs of the Medical Corps, the Quartermaster Corps, and the Militia Bureau, who have the rank of Major General.

ALASKA

One of the important civil as well as military functions of the War Department has been its work in Alaska, in opening that treasure land to American settlement and development, and in maintaining law and order.

Col. W. P. Richardson, U. S. Infantry, President, Board of Road Commissioners of Alaska, since 1905, modestly explains the tranquility prevailing throughout that territory as due to the practice in early days of requiring all newcomers to deposit their firearms with the Army, "for safe keeping." He has been the Government Constructing Engineer in Alaska and points with pride to the many unparallelled obstacles which have been met and overcome in road building. There have been no rebellious peoples to overcome in Alaska—no hostile tribes to subdue. The warfare has been against Nature's obstacles only.

Alaska was practically unknown outside of a small section surrounding the old capital of Sitka at the time of the discovery

of the wonderfully rich placer deposit of gold in 1896, known as the Klondike, in the Canadian Yukon region, a short distance beyond the boundary line. The extraordinary richness of deposit, buried deep under the frost in the heart of the far north stirred men more than any similar discovery since that in California in 1849. Miners, prospectors, and adventurers from every part of the world turned their faces toward this new El Dorado.

With incredible hardship and labor, they packed and dragged their supplies and belongings over the steep Chilkat Pass during the winter of '97–8 to the head of navigation on the Yukon, and there built boats and rafts of every description. With the opening of navigation in the spring of '98, they floated down the Yukon to Dawson to the number of twenty-five or thirty thousand. The camp at Nome on Bering Sea was also established in 1898 and Fairbanks on the Tanana River in 1902.

Following a long established precedent in the opening of our frontiers, the Army was called upon to examine conditions attending this new movement of people to a wilderness country, and to give aid and protection. The detachments of the Army stationed in Alaska have prevented disorder, established and maintained a peaceful condition on a far-distant frontier and been worth their weight in gold to that country.

The military cable and telegraph system connecting Seattle with the principal centres in Alaska as far as Nome was constructed, and is now operated under direction of the Chief Signal Officer of the Army. One has only to travel on the Yukon or along the line across country and see the wide swath cut through the timber and brushwood over mountain passes and across valley swamps for hundreds of miles, to appreciate the value and magnitude of the work done in the construction of this line.

The Board of Road Commissioners for Alaska came into existence by Act of Congress in 1905. Prior to that time there was scarcely the semblance of road or trail throughout the vast

Road building in Alaska

Gatun upper locks, west chamber, Canal Zone

New disciplinary barracks. Old military prison

Wings 3-6-7 have doorless cells

Wings 3-4-5 Auditorium

territory. Travel was almost entirely confined to the waterways in summer and over their frozen surfaces in the interior in winter. The interior is intersected by numerous swift and deep streams fed during the warm summer by the melting glaciers and winter snows of the mountains. These make travel across the country difficult and hazardous. The valleys are usually frozen to great depth, the surface thawing in summer transforms them into morass and swamps to struggle through which is a slow, dangerous, and laborious process. This Board, during its brief existence, has constructed over 900 miles of wagon road and about 2,800 miles of winter sled road and trail.

No other agency of the Government is more competent by its organization and past history, or better equipped for such tasks in a wilderness country, than the Army.

The lines of communication and routes of travel are the beginning of a system which will greatly facilitate the development and settlement of the territory and serve as instruments in any scheme of national defense. The experience gained by officers and men in such work forms a valuable addition to their military training.

"I know not what other men may think of this situation, but as for myself I should feel that the blood of our ancestors who fell at Bunker Hill and Long Island, at Saratoga and Yorktown in the winning of our independence had been spilled in vain if the future before us after all is simply to exist on the sufferance of other nations.

"With malice toward none, with charity toward all our unhappy brethren beyond the seas, with a determination to extend every aid to their suffering members, we must insist that we have a right to safeguard our own independence of action and thought by the creation of a military power and industrial system sufficient for our defense."—From an address delivered by Dr. Edmund J. James, President of the University of Illinois, before the Economic Club of New York, February 25th, 1916.

CHAPTER IV

THE GENERAL STAFF CORPS—THE CHIEF OF STAFF

THE General Staff Corps is the advisory board to the President and the Secretary of War. It was created by Act of Congress, February 14,1903, upon the recommendation of Honorable Elihu Root, then Secretary of War. It has developed into a fitting testimonial to his constructive military statesmanship.

As amended by the Act of June 3, 1916, the General Staff Corps will be increased in five annual increments July 1, 1916–July 1, 1920, to a total of 55 officers, as follows: a Chief of Staff with rank of Major General; two general officers of the line, one of whom, a Brigadier General, shall be President of the Army War College; ten Colonels; ten Lieutenant Colonels; fifteen Majors and seventeen Captains detailed from corresponding grades in the Army for periods of four years. The Chief of the Coast Artillery Corps and the Chief of the Militia Bureau are additional members of the General Staff Corps.

Upon being relieved from duty in the General Staff Corps officers are returned to the branch of the Army in which they hold permanent commissions and no officer shall be eligible to a further detail in the General Staff Corps until he has served two years with troops, except in time of actual or threatened hostilities.

Officers of this Corps are exclusively employed in the study

of military problems, the preparation of plans for the national defense, and the utilization of the military forces in time of war, in investigating and reporting upon the efficiency and state of preparedness of such forces for service in peace or war, or on appropriate General Staff duties in connection with troops including the National Guard, or as military attachés to foreign countries, or on other duties, not of an administrative nature.

Its personnel, excepting general officers, are selected by a board of five officers not below the rank of Colonel.

The General Staff Corps is charged with the duty of studying possible theatres of war and of strategic questions in general; with the collection of military information of foreign countries and of our own; the preparation of plans of campaign or reports of campaigns, battles, engagements, and expeditions; and of technical histories of military operations of the United States and plans for going from a status of peace to one of war. The work of this body of officers is of the greatest value to the service and exercises the strongest influence in increasing the efficiency of the Army. *It has done more toward making our Army efficient than any other influence in recent years.*

The peace strength of the Army as now authorized is practically that determined by the War College Division of the General Staff Corps as set forth in table on back of military and naval map.

The President's command of the Army is exercised through the Secretary of War and the Chief of Staff. The Chief of Staff reports to the Secretary of War, acts as his military adviser, receives from him directions and orders given in behalf of the President, and gives effect thereto in the prescribed manner. The Chief of Staff is detailed by the President from Major Generals of the line of the Army. The successful performance of the duties of this position requires what the title denotes—a relation of absolute confidence and personal accord and sympathy between the Chief of Staff and the President, and between the Chief of Staff and the Secretary of War. For this

reason, without any reflection whatever, upon the officer detailed the detail will in every case cease, unless sooner terminated, on the day following the expiration of the term of office of the President by whom the detail is made.

The Chief of Staff is charged as limited and provided by law with the duty of supervising, under the direction of the Secretary of War, all troops of the line, and of the Staff of the Army.

Major General Hugh L. Scott, the present Chief of Staff has been sent by the President on special missions to quell Indian outbreaks and to confer with Mexican factional leaders along the Mexican border. He has a knowledge of the American Indian not possessed by any other living white man. He converses readily with most all tribes of Indians by their sign language. The Indians call him "The White Father." General Scott was Acting Secretary of War ad interim for 30 days during 1916.

The following facts of general interest are transcribed from the annual report of the Chief of Staff, June 30, 1915:

"A garrison of regiments and organizations at full statutory strength was maintained in the Philippine Islands and concentrated in the vicinity of Manila. Work progressed satisfactorily upon the fortification of Manila Bay. The Philippine Island garrison has been so concentrated as to be useable in any port of the Island and promptly available for the defense of Manila."

"In the Hawaiian Islands about one-half of the total garrison has been provided. Barracks and quarters are being constructed as rapidly as appropriations permit. Also the land and seacoast fortifications."

"In Panama the work of the seacoast fortifications has been rapidly and energetically pushed. Only a portion of the garrison has been sent to Panama owing to the absence of quarters."

"The question of the defense of Guantanamo, Cuba, is still under consideration. No funds have been appropriated and the project has not been formally approved by Congress. The

establishment of a secure and sufficient naval base at this point will be of great value in the defense of the Panama Canal."

"The subject of desertion is an ever recurrent one, and every effort has been made to prevent desertion by ameliorating the condition of the soldier and by educating him as to the nature of the crime, but it still goes on, and, in my opinion, it will go on until the American people change their attitude toward desertion and are made to feel, through education, that desertion is a crime against the nation rather than a mere breach of contract between individuals, and the offender is made to feel disgraced among his friends for committing such a crime against his country."

BORDER DUTY

"The work along the whole Mexican border has been of the most difficult character for the last three years. The troops have been scattered at many places, sometimes in small detachments and sometimes in larger, for nearly 2,000 miles. They have been separated from their families and put individually at great expense, but no complaint has been made and no overt action has been taken.

"The object of each Mexican faction in holding these border towns was twofold—first, to obtain the customs receipts, and, second, to use the United States territory as a base for recruiting and supply."

SEACOAST DEFENSES

"The last comprehensive report upon the adequacy of our seacoast defense was that made by the national coast defense board on February 1, 1906. The period that has elapsed since that date has witnessed such marked changes in naval design, increasing both the offensive and the defensive capabilities of warships, that it has become necessary to restudy the projects of the national coast defense boards, with a view to their modification to meet existing conditions. This study is now being

made by the War Department Board of Review. In accordance with the policy adopted by the department during the past year, the large-caliber direct-fire guns that will be included in these revised projects will be of 16-inch caliber."

"The full effectiveness of the existing seacoast armament cannot be attained under present conditions because of the shortages in the supply of the essential accessories, such as ammunition, searchlights and fire control. Of the latter deficiencies, that of ammunition is the most serious, as the total supply on hand is only about three-fourths of the so-called one hour's allowance. That allowance is deemed wholly inadequate, and no material measure of relief will be afforded unless future appropriations for ammunition are greatly in excess of the annual appropriations for that purpose that have been made heretofore."

"The completion of the submarine mine material required for the mine defenses is another urgent need. This material should be maintained at all times in a state of preparedness for immediate service, as naval attack upon our seacoast cities may occur coincidently with, or even may precede, a formal declaration of war."

DEVELOPMENT OF LARGE-CALIBERED MOBILE ARTILLERY

"The history of war will show almost without exception that each great conflict has resulted in the introduction of new and powerful weapons and devices for attack and defense. Initial advantages of immense import have been gained by a belligerent who has developed some new innovation against which no immediate defense was adequate. The innovation of yesterday becomes the necessity of to-morrow. The present gigantic conflict waging in Europe is too near perspective and too obscure in detail to grasp as yet all its manifold lessons, but one of the great outstanding features is the use of large-calibered mobile artillery."

STUDENTS' MILITARY INSTRUCTION CAMPS

"Aside from the military instruction given these students and business men, I feel that the interest in preparedness which lead these men not only to give their time to the Government, but to incur the expense of buying uniforms and paying for transportation to the camps, is of great value to the country and should be encouraged by the War Department. These camps have passed the experimental stage; there can hardly be any question as to the advisability of continuing them and extending them where the conditions of service of regular troops are such as to permit the department to send troops and instructors to the camps. Men with means, probably, do not object to paying the necessary funds to get the military training which the Government expects to use in case of need. Men who are not so fortunately fixed financially should be permitted to show their patriotism and interest in preparing the country for war. If these camps are of value, which undoubtedly they are, and are to be continued, certain necessary expenses of the men willing to give their time should be met by the Government.

Norman Angell, internationalist, urging the formation and statement of a definite foreign policy, at the Washington's Birthday convocation in the Auditorium of the University of Illinois, said, in part: "Most wars are not fought for actual defense against invasion; they are fought to defend some policy. None of the seven wars in which the United States has been engaged has been precipitated by actual invasion of territory; all have been in defense of policy. . . . War itself has become international. France and England could not have resisted Germany without each other, and without both Belgium cannot hope to defend her nationality without her treaties with both. . . . Force is, or should be, the servant of man, and an instrument of the human intelligence; and whether it is well or ill used depends absolutely upon that intelligence. The same instrument can be used either for defense or suicide. Force is not a thing that operates of itself apart from the human will, and wisdom will not come of itself. It demands a definite moral effort to the end that we may use our instrument well instead of ill."

CHAPTER V

THE ADJUTANT GENERAL'S DEPARTMENT

THE Adjutant General's Department consists of the Adjutant General, 7 Adjutant Generals with the rank of Colonel, 13 with the rank of Lieutenant Colonel, 30 with the rank of Major.

Brigadier General Henry P. McCain has been the Adjutant General since August 27, 1914.

The Adjutant General's Department is the department of records, orders, and correspondence of the Army and the Militia. All orders and instructions emanating from the War Department, and all regulations affecting the Army or the status of officers and enlisted men, are issued by the Secretary of War through the Chief of Staff, and are communicated to troops and individuals in the military service, through the Adjutant General of the Army.

The Adjutant General is charged under the direction of the Secretary of War and subject to the supervision of the Chief of Staff in all matters pertaining to the command, discipline, or administration of the existing military establishment, with the duty of recording, authenticating, and communicating to troops and individuals in the military service all orders, instructions, and regulations issued by the Secretary of War through the Chief of Staff; of preparing and distributing commissions; of compiling and issuing the annual Army Register, and the monthly Army List and Directory; of consolidating the general returns of the Army; of arranging and preserving reports of

officers detailed to visit encampments of militia; of preparing the annual returns of the militia required by law to be submitted to Congress; of managing the recruiting service.

The Adjutant General has charge of the military and hospital records and pensions of the volunteer armies, and of the publication and distribution of the Official Records of the War of the Rebellion. He has charge of the historical records and business of the permanent military establishments including pay, bounty, pensions, and other business pertaining to or based upon the military or medical histories of former officers or enlisted men.

The archives of the Adjutant General's office include: all military records of the Revolutionary War; the records of all organizations, officers, and enlisted men that have been in the service of the United States since the Revolutionary War; the records of the movements and operations of troops; the medical and hospital records of the army; all reports of physical examination of recruits and all identification cards; the records of the Provost Marshal General's bureau; the records of the Bureau of Refugees, Freedmen and Abandoned Lands; the Confederate records, including those pertaining to the legislative, executive, and judicial branches of the Confederate government.

The Adjutant General takes such steps as are necessary to complete or correct the records in his custody, and answers all calls and inquiries from these records that do not require the administrative action by other bureaus of the War Department. This office labors continually to simplify military correspondence records and returns. An average of 1,100 communications, inquiries, etc., are received daily, about 90 per cent. of which are answered within twenty-four hours. Including returns of troops, muster rolls, enlistment papers, identification records, and periodical reports the daily average of papers handled is about 1,800.

Much statistical data and many items of general interest relative to the Army are treated in the annual reports of the Adjutant General. The last officer of the Regular Army who saw

service in the Civil War, Col. John Clem, Q.M.C., was retired for age in 1915, with the rank of Brigadier General.

Certificates of eligibility have been issued to 184 persons who were reported, after examination, to be especially qualified to hold commissions in any volunteer force which may be called forth, other than a force composed of organized militia. In addition 658 applicants have qualified subject to future physical examination.

From 1911–1915, 1,935 students in civil institutions of learning were recommended as qualified for appointment as volunteer officers. These are graduates of colleges at which officers of the Regular Army are detailed as professors of military science and tactics, and who have been recommended by those professors as especially qualified for the military service, and students who have attended two summer camps of instruction recommended by the camp commanders. Approximately 32,300 students were enrolled during 1916 in civil institutions at which ninety-eight army officers were detailed as military instructors.

Army service is voluntary, and after November 1, 1916, is for a period of three years with the colors, and four years in the Army Reserve, unless sooner discharged. *After the expiration of one year's honorable service any enlisted man serving within the continental limits of the United States, whose company, troop, battery, or detachment commander shall report him as proficient and sufficiently trained may, in the discretion of the Secretary of War, be furloughed to the Army Reserve, but no man furloughed to the reserve shall be eligible to reënlist in the service until the expiration of his term of seven years.* Vacancies are continually occurring due to expiration of enlistment period, death, discharge by purchase, disability, desertion, and by order of the Secretary of War. Filling these vacancies now aggregating about 65,000 per year, devolves primarily upon the Adjutant General of the Army. This is accomplished through the General Recruiting Service, maintained in cities throughout the country and by local recruiting service at each Army post or

station. During the fiscal year 1916 general recruiting stations were maintained for varying periods, in 352 cities by 59 officers and 1,080 enlisted men. Applicants reporting at any recruiting station receive information concerning all phases of Army life. Extreme care is exercised in order to accept only those who evidence aptitude for military service and are otherwise eligible and suitable. Consent of parents or guardian is required for enlistment under eighteen years of age. Postmasters of the second, third, and fourth class may receive five dollars for each recruit accepted for enlistment in the Army procured by them. Applicants for enlistment are sent at Government expense to the nearest recruit depot for final examination; if accepted they are given preliminary drill and training before being sent to their permanent organization, which as far as practicable is of their own choice. If rejected they are returned to the place of acceptance.

When the punitive expedition was organized for service in Mexico in March, 1916, the Army was practically recruited to its authorized minimum strength and Congress by resolution, authorized it to be increased to 111,305 enlisted men not including 6,000 in the Quartermaster Corps and 5,388 in the Hospital Corps.

The actual strength of the Army, May 25, 1916, was: Regular Army, 88,940; Hospital Corps, 3,912; Quartermaster Corps, 4,559; Philippine Scouts, 5,604.

The Adjutant General of the Army is charged with the government and control of the United States Disciplinary Barracks, Fort Leavenworth, Kansas, and its branches at Fort Jay, Governors Island, N. Y., and at Alcatraz Island, San Francisco, Calif. This includes all offenders sent thereto for confinement and detention and the remission or mitigation of sentences of general prisoners who have been dishonorably discharged from the military service.

At the Fort Leavenworth Military Prison the old stone buildings had become so dangerous and unsanitary that Congress

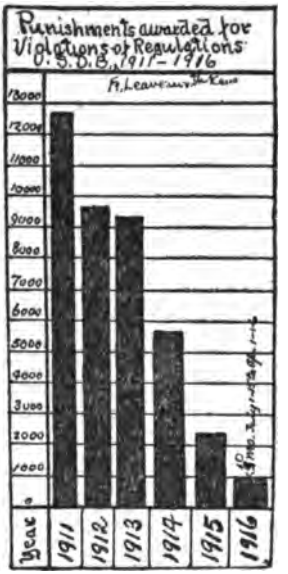
in 1908 responded to the appeal of Adjutant General Ainsworth, by appropriating $583,000 for a new military prison and $60,000 additional for a new power, light, and heating plant, with the proviso that these appropriations should be so expended as to give the maximum amount of employment to the inmates.

The new prison, built on the astral plan (eight wings radiating from a rotunda) to accommodate about 1,800 prisoners and requiring about 90,000 cubic yards of masonry, is about 90 per cent. complete. All brick and cement blocks are made and laid by prisoners and all other skilled labor in connection therewith is prison labor under the direction of civilian superintendents and foremen.

A new disciplinary system was inaugurated September 13, 1913, by Secretary of War Garrison, based upon the provisions of the Act of Congress, March 3, 1873, authorizing and directing the Secretary of War to remit in part the sentences of such convicts and to give them an honorable restoration to duty in case the same is merited. To revive this Act certain amendments necessary to subsequent laws were enacted in 1912, 1914, and 1915. The new system has reached a commendable state of development, although it is still in the experimental stage. One by one the objectionable features of the old system are being replaced by modern penal practice. Unlimited letter writing is permitted; striped clothing has been discarded; the rule of silence in the mess hall, the shaving of heads and cropping of hair no longer prevails. Vocational and industrial training are practised.

Seven disciplinary companies equipped as infantry are maintained for purely military offenders for military drill and training one-half of each day. Olive drab clothing, without numbers, the privilege of saluting officers, open cells, honor committees without guard, and other privileges are allowed this class. Assignment to disciplinary companies is made at the end of a thirty-day calisthenic period, following admission. Later, if they desire restoration to the Army, a searching character study and examination is made to determine their aptitude and

eligibility for military service. The military training received includes calisthenics; recruit drill; training in the school of the soldier, squad, company, and battalion; pitching and striking tents; sand table instruction in entrenching; actual construction of revetting material and of frame and spar bridges; musketry course and target practice; signaling and guard duty. Assignment to hard labor includes vocational training calculated to insure success in civil life. At Fort Leavenworth, Kan., a Disciplinary Battalion of four companies is maintained and one, of two companies, at Alcatraz Island.



The War Department is thus reaching down and lifting up a portion of its military delinquents, removing the stigma of dishonorable discharge, restoring military status and self respect, placing their rifles back upon their shoulders and teaching them the refinements of soldiering under a restraint that augurs well for their rehabilitation.

At the Disciplinary Barracks and at posts (May 1, 1916) 371 men had been restored of whom seventy-three have proven to be failures, while several have been advanced to the grade of sergeant. Several hundred have been granted permission to reënlist and 244 had taken advantage of this privilege.

There has been a great improvement in discipline as indicated by the diagram of punishments awarded for violation of prison regulations during the past six years at Fort Leavenworth, Kansas.

The United States Disciplinary Barracks is contributing materially to the development of intensive military training

throughout the Army by means of sand table and terrain sets of miniature models of trenches, revetments and various phases of military field engineering and musketry.

These sets are being manufactured there for distribution to military organizations of the Regular Army, National Guard, and Military Colleges.

The Military penal institutions and system of discipline, punishment, and correction no longer suffer by comparison with other penal institutions.

"The present European war ought to prove a lesson to the people of the United States. It is an apt illustration of the suddenness with which war comes. It should teach us that we must be prepared for any and every possible emergency.

"It proves the wisdom of those who favored and insisted on the fortification of the Panama Canal, despite protests of peace propagandists. The recollection that England seized the Suez Canal in 1882, and closed it for three days to the vessels of all nations and even those of the Suez Canal Company itself, ought to have been a sufficient argument in favor of fortification. But we were told that the world has advanced. That our treaties would protect our waterway. Treaties indeed! What has become of the neutrality treaties concerning Luxemburg and Belgium? They have been broken as though they had been ropes of sand.

"To-day we stand isolated and alone in world politics. We cannot count upon the friendship of a single nation. We must be ready to stand alone and by ourselves in every international emergency. Therefore, it is essential, nay, more, it is absolutely necessary that we maintain our Army and Navy in such a state of preparedness that our National honor will be protected, and upheld, come what may."—REPRESENTATIVE JULIUS KAHN, ranking minority member of the House Military Affairs Committee.

CHAPTER VI

THE INSPECTOR GENERAL'S DEPARTMENT

THE Inspector General's Department has been presided over by Brigadier General Ernest A. Garlington, I.G.D., since October 1, 1906. The Inspector General is assisted by four Inspector Generals with the rank of Colonel, eight with rank of Lieutenant Colonel, sixteen with rank of Major. There are, in addition to these, four Acting Inspector Generals detailed from field officers of the line as assistants, under the Act of June 23, 1874. The Inspector General or an assistant inspects the United States Military Academy; the service schools; garrisoned posts and commands; camps of maneuver and instruction; staff offices at department headquarters; general hospitals; armories and arsenals; quartermaster, ordnance, medical, signal, and engineer depots; recruit depots and recruiting stations; the disciplinary barracks and its branches, and military prisoners in United States penitentiary, Leavenworth, Kansas; ungarrisoned posts; national cemeteries; United States Army transports, cable boats, mine planters, harbor boats, and chartered transports upon arrival at or departure from ports; unserviceable property; money accounts of all disbursing officers of the Army; Soldiers' Home, District of Columbia, and the headquarters and ten branches of the National Home for Disabled Volunteer Soldiers. Department and brigade commanders have on their staff an Inspector General who assists in the annual tactical inspection of troops.

The sphere of inquiry of the Inspector General's Department

includes every branch of military affairs. Inspector Generals exercise a comprehensive and general observation within the command to which they may be assigned over all that pertains to the efficiency of the Army, the condition and state of supplies of all kinds, of arms and equipment, of the expenditure of public property and moneys, and the condition of accounts of all disbursing officers of every branch of the service, of the conduct, discipline, and efficiency of officers and troops. They report with strict impartiality in regard to all irregularities that may be discovered and make suggestions for the correction of defects coming under their observation.

They feel the pulse of the Army, so to speak, and recommend modification or amendment of existing orders to meet new conditions, thus exerting a timely and potent influence over the upkeep and welfare of the Army.

General Sherman commenting of the functions of this department stated: "On the Inspector-General of the Army devolves, as a matter of course, duties of the most delicate and responsible nature. He is, or should be, in fact the alter ego of the Commander in Chief. In technical language he is his 'other eye.' He inspects troops, examines money and property accounts, detects errors of administration and discipline, prevents irregularities of all kinds, and is habitually authorized to give orders on the spot in the name of his principal. The heads of bureaus are, in our service, construed as branches of the War Department, so that the Inspector-General has frequently been intrusted with most confidential inspections by the Secretary of War, in addition to his purely military functions."

The annual report of General Garlington, for 1915, contains the following items of general interest which illustrate how this Department keeps the Secretary of War informed of conditions existing in the Army:

"The drill and instruction of troops is very satisfactory with few exceptions.

"The new infantry equipment is excellent.

"The Army as a whole is as fully equipped as could be expected. Discipline is satisfactory.

"The length of the enlistment period, seven years, is given as a reason why many do not enlist or reënlist.

"There is a serious shortage in public animals and means of transportation at some Coast Artillery posts.

"There has been progress and improvement in signaling by means of the flag.

"The transport service is impaired due to the slow speed of transports. Several chartered vessels are in use as transports.

"It is believed that several years' trial has shown that the annual test ride for field officers (a ride of 90 miles in three consecutive days or a walk of 50 miles in two days) has failed to accomplish any good purpose and should be abandoned. The daily exercise now required under the direction of the post commander, where daily drills and routine work are not sufficient, will, without additional cost and waste of time, accomplish the purpose for officers serving at posts. For other officers a certain amount of exercise each month would be more beneficial.

"The food furnished the enlisted men is said to be excellent especially as compared with conditions that prevailed some years ago. This is due to some extent to improvements in the ration, but is said to be more especially due to better cooks, many of whom are graduates of Army cooking schools."

When Patrick Henry uttered his impassioned appeal to the Virginia Convention in 1775, he said:

"It is vain, sir, to extenuate the matter. Gentlemen may cry peace, peace, but there is no peace. The war is actually begun. The next gale that sweeps from the north will bring to our ears the clash of resounding arms. Our brethren are already in the field.

"Why stand we here idle? What is it that gentlemen wish? What would they have? Is life so dear, or peace so sweet, as to be purchased at the price of chains and slavery? Forbid it, Almighty God! I know not what course others may take, but, as for me, give me liberty or give me death!"

CHAPTER VII

THE JUDGE ADVOCATE GENERAL'S DEPARTMENT

THE Judge Advocate General's Department is the legal Bureau of the War Department. It consists of the Judge Advocate General, with the rank of Brigadier General, 4 Judge Advocates with the rank of Colonel, 7 with the rank of Lieutenant Colonel, 20 with the rank of Major, and such officers detailed as Acting Judge Advocates of departments or tactical divisions, or for other duties as may be necessary.

Brigadier General Enoch H. Crowder has been the Judge Advocate General and Chief of this Department since February 15, 1911.

The Judge Advocate General is the custodian of the records of all general courts-martial, courts of inquiry, and military commissions, and of all papers relating to title of land under the control of the War Department, except the Washington Aqueduct and the public buildings and grounds of the District of Columbia.

A Judge Advocate is detailed upon the staff of every commander exercising general court-martial jurisdiction. These officers supervise the preparation of charges which are to be referred to general court-martial for trial, review the proceedings of courts-martial, making recommendations to the commanding general as to the correctness of procedure and validity of the action of the courts.

The Judge Advocate furnishes the Secretary of War with information and legal advice relating to lands and waters under

the control of the War Department. He renders legal opinions upon questions arising under the laws, regulations, and customs pertaining to the Army, and upon miscellaneous questions arising under civil law. He examines and prepares legal papers relative to the construction of bridges, seawalls, dams, bulkheads, jetties, levees, dikes, wharves, piers, breakwaters, causeways, obstructions, dredging and filling, and other work over or in navigable waters. He drafts bonds and examines those given to the United States by disbursing officers, colleges, rifle clubs, and others; he drafts and executes deeds, contracts, licenses, leases, and other legal papers relating to matters under the War Department.

During the year ending June 30, 1915, there were considered by the Judge Advocate General's office, 1,253 miscellaneous cases upon various legal questions, and 5,339 court-martial proceedings. The record of each trial by general court-martial is carefully examined in this office even though the sentence of the court has been carried into execution by the department commander. The concern of the Judge Advocate General for those men who have come under the punishment of military courts has not ended with examinations as to the legality of their convictions, but has extended to a study of modern penology in connection with the handling of military prisoners.

Secretary of War Stimson visited the military prisons in 1911 and reported that, "The conditions existing and of long standing are contrary to the modern trend of correctional institutions; that desperation and despair prevailed." He directed Judge Advocate General Crowder to make a personal inspection of military prisons and a careful investigation of existing conditions. His report thereon, submitted November 20, 1911, is a most comprehensive analysis of all phases of military discipline and punishment. It was pointed out that there was perhaps no other subject connected with the administration of the military establishment which had received more earnest attention by the military authorities than the subject of desertion, its

causes and proper punishment; that annual reports, service journals, and the public press teem with its discussion. He quoted at length from the report of the Inspector General, 1905, summarizing systematic efforts made to ameliorate the condition of the soldier in respect to his living, dress, enjoyments, comfort, and contentment, as a means of reducing desertion rates. He quoted from the report of the Adjutant General, 1908, setting forth that desertion is due in a great measure to underlying causes inherent in our national life. He also pointed out that the organic Act of March 3, 1873, establishing the Military Prison contemplated that prisoners should to some extent be reclaimed and saved to the Army. It could not be ascertained that the Secretary of War had made use of this authority to restore prisoners to duty. This had not been possible since the enactment of August 1, 1894, prohibiting the reënlistment of those whose last preceding term of enlistment had not been honest and faithful.

He suggested amendments necessary to existing laws restricting reënlistment and affecting rights of citizenship in the case of deserters, and which have been corrected by Acts of August 22, 1912 and April 27, 1914.

Secretary of War Garrison at once became deeply interested in the necessity and propriety of military prison reform. He personally inspected the military prisons in 1913 and directed inauguration of a new system recommended by General Crowder and to be developed under his guidance and supervision. This was undertaken by the issuance of G. O. 56 W. D. 1913 and has been highly successful.

Congress further contributed to the successful issue of the new system by act of March 4, 1915, which changed the name of the Military Prison to the United States Disciplinary Barracks; authorized parole of general prisoners; extended authority to restore to an honorable status to include those prisoners confined elsewhere than at the United States Disciplinary Barracks, and to vest in the Adjutant General of the Army the

government and control of the Disciplinary Barracks and its branches.

In connection with the study of the question of desertion a graphic chart was prepared depicting the annual rise and fall in the desertion rates since 1830 and including the rate of pay of privates, length of enlistment, rewards for apprehending deserters, and other congressional and War Department action to limit and control desertion. This table is especially interesting at this time as teaching the fallacy and danger of depending upon hastily raised and untrained troops in national emergency. The desertion rate of raw troops in the Civil War rose to 45 per cent. of the enlisted strength. The desertion rate in the regular army was highest when the enlistment period was longest. Curiously enough in 1898 when the Spanish-American war was being waged the percentage of desertions was the lowest in 68 years, being but 1.6 per cent. The number of desertions fluctuate greatly. In 1873 18.8 per cent. deserted, in 1874 12 per cent., in 1875 7.2 per cent. During the last twenty-five years the percentages have not differed so greatly nor has the total been so large.

The Judge Advocate General's Department has submitted to Congress for approval a revision of the *Articles of War* for the government and discipline of the Army, many Articles being entirely obsolete and others deficient by reason of changes which have been imposed by Congressional enactments and modern efficiency.

An important undertaking devolved upon the Judge Advocate General's Department during the temporary control exercised over Cuban affairs in 1907–09, by the United States Army of Occupation, through the compilation of new laws and a penal code for Cuba, the insurrection there having arisen principally through the lack of suitable laws.

CHAPTER VIII

THE QUARTERMASTER CORPS

THE Quartermaster Corps is administered by the Quartermaster General. The authorized number of officers of the Quartermaster Corps is 1 Major General, 2 Brigadier Generals, 21 Colonels, 24 Lieutenant Colonels, 68 Majors, 180 Captains, and 72 Pay Clerks with the rank, pay, and allowances of second lieutenants, and one as First Lieutenant.

The total enlisted strength of the Quartermaster Corps and the number in each grade is fixed from time to time by the President in accordance with the needs of the Army, the number in the various grades not to exceed the following percentages of the total authorized enlisted strength of the Quartermaster Corps: Quartermaster Sergeants, senior grade, five-tenths of one per cent.; Quartermaster Sergeants, six per cent; Sergeants, first-class, two and five-tenths per cent.; Sergeants, twenty-five per cent.; Corporals, ten per cent.; Privates, first-class, forty-five per cent.; Privates, nine per cent.; Cooks, two per cent.

The Quartermaster Corps provides means of transportation of every character needed for the movement of troops and material of war. It furnishes all public animals in the service of the Army, forage for same, horse equipments, wagons, and all articles necessary for their use.

It furnishes clothing, camp, and garrison equipage for the Regular Army and National Guard. It erects barracks, storehouses, and other buildings. It constructs and repairs roads, railways, and bridges; builds and charters ships, boats,

docks, and wharves needed for military purposes; erects pumping, heating, power, and light plants and sewage systems; supplies subsistence for enlisted men and others enlisted therein; supplies articles for authorized sales and issues; furnishes lists of articles kept on sale; gives instructions for procuring, distributing, issuing, selling, and accounting for all quartermaster and subsistence supplies. It has charge of the distribution of and accounting for funds for the payment of the Army, the Porto Rican regiment of infantry, and the Philippine Scouts, and such other financial duties as are especially assigned to it; and attends to all matters connected with the military service which are not expressly assigned to some other bureau of the War Department. The expenditures of the Quartermaster Corps aggregate about $90,000,000 annually.

The Quartermaster Corps transports to the place of issue and provides storehouses and other means of protection for the preservation of stores supplied for the Army by other departments.

General depots for the collection, manufacture, and preservation of quartermaster stores, until required for distribution, are under the immediate control of the Quartermaster General. An officer of the Quartermaster Corps is assigned as Chief Quartermaster of each geographical department or brigade or division of troops and as commanding officers of supply depots maintained in various parts of the United States.

The Quartermaster Corps provides cooking and quarters for the entire enlisted strength of the Army. Our Army is said to be better fed, clothed, and quartered than any other army. The ration for garrison duty for one man for one day now costs about thirty cents and is as follows: fresh beef, 20 oz.; flour, 18 oz.; baking powder, .08 oz.; beans, 2.4 oz.; potatoes or onions, 20 oz.; evaporated prunes, apples, or peaches, 1.28 oz.; sugar, 3.2 oz.; coffee, roasted and ground, 1.12 oz.; milk, evaporated, .5 oz.; vinegar, .16 gill; salt, .64 oz.; pepper, black, .04 oz.; cinnamon, cloves, ginger, or nutmeg, .014 oz.; lard, .64 oz.; butter, .5 oz.; syrup, .32 gill; flavoring extract, .014 oz.

A long list of articles may be substituted for the above on the basis of cost. The money value of the ration may be received by the organization commander in lieu of certain of the articles and then be expended by him for other food articles thus permitting a more diversified bill of fare. This fund is called the "mess fund." Troops are messed by company organizations. Company gardens furnish fresh vegetables in season.

The Quartermaster General, Major General James B. Aleshire, incident to his appearance before the Military Committee of the House in January, 1916, mentioned the following interesting items pertaining to his corps:

"The expense of maintaining troops on the border as compared with that at regular garrisons is estimated to be $331,000 per year above the ordinary expenses. It requires a little over $200,000 per year to replace worn out tentage.

"The equipment on hand is reported as sufficient to provide for the Army, the National Guard, and an additional 250,000 troops. It is considered possible to equip 300,000 additional men within seventy-five days. This would probably provide equipment as fast as men could be recruited.

"It was recommended that there be a quartermaster reserve corps, similar to the German plan, to include specialists from civil life, who would handle supplies and be commissioned under certain conditions. As an example of the technical knowledge necessary it was stated that about 3,000 different kinds of articles are purchased for the Army, and counting the different sizes, etc., would bring the total to 10,000.

"The Army transport service consists of sixteen transports, several of which are of little use. It would be possible to obtain by charter 366 vessels which could be used for transport purposes in time of war. Forty per cent. of these vessels have been surveyed by a marine engineer and estimates prepared to equip them to the best advantage. It is estimated that if one-third of the tonnage were used, approximately 60,000 men and 40,000 animals could be transported, but the speed with which such

Buzzacott Army rolling kitchen which Generals Funston and Pershing have endorsed and strongly urged to be adopted for immediate use by the Army, along the Mexican border. It cooks as it travels along, thus minimizing the cooking bugbear of Army field service

The United States Army's present system of camp cooking

Enlisted man, Medical Corps, in heavy marching order. The pouches of belt contain medicine.

an operation could be completed would depend upon the length of time it would take to get the ships. The vessels could be equipped after being received by the Government in four or five days.

"Manufacturers are able to deliver 6,200 trucks within thirty days. Of that number about fifty per cent. would represent trucks with which the department is familiar as a result of exhaustive tests. The Government by law has preference and precedence over all other traffic in the movement of the Army and its supplies, and the officers of the transportation companies are compelled to see that the Government work is expedited.

"The question of railroad transportation has been thoroughly investigated by the Quartermaster Corps. The American Railway Association, which is composed of leading officials of the various railroads, offered to establish an office in the War Department for the benefit of the Government when the Mexican situation seemed particularly serious. Among the various statistics gathered, it was shown that there are available 63,000 locomotives, 59,000 passenger cars, and 2,421,000 freight cars.

"Officers of the Quartermaster Corps have made very careful investigations in the three remote districts and have located about 225,000 horses and 120,000 mules suitable for all Army purposes, which could be purchased in an emergency. The normal demand for horses for war purposes by foreign governments has been about 30,000 per year, but there have been shipped from this country in a period of eighteen months 551,000 animals. The horses exported are far below the standard in the United States Army, as it has been possible to buy younger animals than those desired for service abroad. One of the interesting facts in connection with this large shipment of horses is that but ten per cent. of brood mares have been included in that number. The supply of horses suitable for the Army under the plan proposed by the War Department and the Department of Agriculture, which was put into effect in 1910, has resulted in several thousand young horses being recorded. It is reported

concerning an attempt to have horses raised by the Indians on various reservations, that it has been found that there was an excellent opportunity to obtain colts from this source. However, after the plan had been inaugurated the commissioner of Indian affairs decided that the Indians should not raise horses for war purposes, as he desired to get the Indian mind as far away from war as possible."

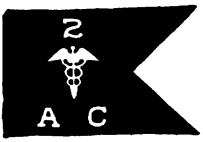
In connection with the alarm now seriously felt in America over the cutting off of the essential dye stuffs heretofore supplied by Germany, it is very interesting to note that this same lesson was taught America during the War of 1812–1814. Up to that time the uniform of West Point cadets was blue the same as that of commissioned officers of the Army. On account of the blockade during this war, blue dye stuffs could no longer be obtained. In the summer of 1814 General Winfield Scott was forced to clothe his army in gray. The regulars wore gray when they won the battle of Chippewa, July, 1814. The authorities at West Point in honor of this victory, and in deference to General Scott, changed the cadet uniform to the present gray uniform.

Later on the uniform for officers was again changed to blue as at present. The Quartermaster Corps is again confronted with the probability of having to abandon the blue uniform on account of the present interruption of export of dye stuffs from Germany. In the development of the dye-stuff industry over 750 by-products have arisen making this one of the most intricate and complicated of manufacturing industries.

"The fool's paradise of an unprotected peace in which the United States thought it could live 'unarmed and unafraid' has had the flaming sword of battles placed at its gate, and while the American nation can, if it choose, continue to live in it unarmed, it can no longer live in it unafraid."—TALCOTT WILLIAMS, Dean of the School of Journalism, Columbia University.

CHAPTER IX

THE MEDICAL CORPS



Guidon of
Ambulance Company

THE Medical Corps is the non-combatant branch of service. Its personnel carry no weapons, being protected on the field of battle by the red cross emblem of the Geneva convention by international agreement.

The Medical Corps comprises the Medical Corps proper, the Medical Reserve Corps, until June 1, 1917, the Dental Corps, a Veterinary Corps, an enlisted force, the Nurse Corps, and the contract surgeons now authorized by law.

Major General William C. Gorgas, M.C., Surgeon General, is chief of this corps with rank of Major General, by special act of Congress, by reason of his distinguished services in the Canal Zone. Its personnel and organization is contingent upon the strength of the Army. It consists of commissioned officers below the grade of Brigadier General proportionally distributed among the several grades, the total number authorized not exceeding seven for every 1,000 of the total enlisted strength of the Army approximately as follows: 1 Major General, 48 Colonels, 82 Lieutenant Colonels, 360 Majors, 514 Captains, 514 First Lieutenants. The President is authorized to detail five medical officers of the Army for duty with the Military Relief Division of the American National Red Cross.

The Surgeon General is charged with the expenditure of the Medical Corps appropriations and is the advisor of the Secretary of War and Chief of Staff upon matters relating to the health, sanitation, and physical fitness of the Army and the administration of the medical service. He exercises military control over

the general hospitals, medical supply depots, hospital ships and trains, but not over the medical personnel and medical units which are under command of officers of the line, except in so far as relates to duties, reports, and supplies of a purely professional nature.

The distinguishing color of the Medical Corps was green until after the Spanish-American War. In 1902 maroon was adopted, this being the distinctive color of the medical service of most of the great military powers. The distinctive badge of the Medical Corps is the caduceus.

The object of medical administration in campaigns are: First, the preservation of the strength of the Army in the field—(a) by the necessary sanitary measures; (b) by the retention of effectiveness at the front and the movement of non-effectives to the rear without obstructing military operations; and (c) by the prompt succor of the wounded on the battlefields and their removal to the rear thus preventing the unnecessary withdrawal of combatants from the firing line to accompany the wounded and promoting the general service of the troops. Second, the care and treatment of the sick and injured at the front, in the line of communications and in home territory.

The Medical Corps is specifically charged with the administration of the sanitary service of the Army as follows:

1. The initiation of sanitary measures to insure the health of the troops.

2. The direction and execution of all measures of public health among the inhabitants of occupied territory.

3. The care of the sick and wounded on the march, in camp, on the battlefield and after removal therefrom.

4. The methodical disposition of the sick and wounded so as to insure the retention of those effective and relieve the fighting force of the non-effective.

5. The transportation of the sick and wounded.

6. The establishment of hospitals and other formations necessary for the care of the sick and injured.

7. The supply of the sanitary material necessary for the health of the troops and for the care of the sick and injured.

8. The preparation and preservation of individual reports of sickness and injury in order that claims may be adjudicated with justice to the Government and to the individual.

In addition to the caring for the sick and injured, medical officers act as sanitary advisers of commanders and instruct the troops in personal hygiene. Beginning with camp sites and the water supply they continue their supervision of these and other sanitary matters to the close of the campaign.

In time of war the sanitary service includes:

1. All persons serving in or employed by the Medical Department, including officers and men temporarily or permanently detailed therein.

2. Members of the American Red Cross Association assigned to duty with the Medical Corps by competent authority.

3. Individuals whose voluntary service with the Medical Corps is duly authorized.

Upon the Medical Corps devolves the examination, acceptance, and swearing into the service of all recruits. This examination is more rigid than that required by life insurance companies, yet no able-bodied young man of good repute desirous of army service need fear it.

Military service is so exacting and the consequences of illness or physical breakdown under the stress of active service so serious a problem to the Government that extreme care must be exercised in accepting men for service. Our Government exceeds all other governments in gratitude extended to disabled soldiers through pensioning. One-half year's pay is donated by the Government to the beneficiary of any officer or enlisted man who dies in service in line of duty.

The Medical Corps of the United States Army is renowned. Entrance therein is most difficult. On its rolls for active service and in the Medical Reserve Corps are long lists of distinguished surgeons and specialists many of whom are of international

repute. The annals of the Medical Corps abound with specially gallant, meritorious, and martyrdom service in the cause of medical research, science, and humanity. It remained for the Army Medical Corps to lead the world in sanitation and in the eradication of preventable disease. The successful completion of the Panama Canal without abnormal loss of life through dreaded tropical diseases, that cut short the earlier attempt of the French company, is one of the greatest monuments to scientific research and professional skill which any branch of service has erected to its glory and memory.

ARMY MEDICAL COLLEGE

In 1892 the Army Medical School was organized at Washington, for the purpose of preparing young officers for their future duties as well as for post-graduate work for the older officers. It gives advanced and very practical courses in military hygiene, sanitary chemistry, clinical microscopy, and bacteriology, tropical medicine, the military aspects of medical and surgical practice, ophtalmology and optometry, Roentgen-ray work, Medical Corps administration and the military duties of medical officers, hospital corps drill, and first aid. Lectures are also given in psychiatry with clinical instruction at the Government Hospital for the Insane and a short course in military law by an officer of the Judge Advocate General's Department. Instruction in horsemanship is given by officers of Cavalry at Fort Myer, Va. The laboratories of the Army Medical School are equipped for research work as well as clinical instruction and the facilities of the Army Medical Museum and the Library of the Surgeon General's office are available for its teachers and students. From this school and the Surgeon General's office was organized in 1898 the celebrated Reed and Carroll Yellow Fever Commission. Yellow fever is now a controllable disease.

The work of this board made possible the performance of General Gorgas in cleaning up Cuba and later as Sanitary

Engineer at Panama, to make the building of the canal a possibility and at the same time to reduce the death rate of this pest hole as to make it compete with the health resorts.

The Department of Bacteriology, Pathology, and Laboratory Diagnosis, through research unsurpassed by any medical college in the world, has established an international reputation. When one considers what would be a reasonable pecuniary reimbursement to the Government for the services rendered to tropical peoples and various countries through the discoveries of the Army Medical Corps, and the sanitary measures introduced to stamp out and permanently eradicate preventable and communicable diseases which claimed thousands of victims annually, it would appear that a low reasonable estimate would more than absorb the entire expenditures for the military establishments for a period of several years.

Another notable event in the medical history of this continent was the discovery by Ashford of a new type of hook worm infesting the natives of Porto Rico and his successful campaign for the eradication of this disease. His most recent achievement is the discovery of a sort of yeast or fungus which he believes to be the cause of sprue, a widely prevalent tropical disease.

In 1907 Lieut. Colonel F. F. Russell, M. C., became interested in the vaccine prophylaxis of typhoid fever. After prolonged study and research, he evolved a solution of this problem such that typhoid fever has been practically eliminated from the Army. His method of typhoid inoculation was adopted by the Government in other departments and is rapidly becoming a routine measure in civil life.

Beri beri, one of the scourges of the far east, yearly took its toll of hundreds of lives in the Philippines, Japan, and China. While much work had already been done in determining the cause of this disease, the investigations of the United States Army Board for the Study of Tropical Diseases in the Philippines, aided materially in proving that beri beri is a deficiency disease, usually due to the excessive consumption of polished

rice. As a result of recommendations by this board, a more suitable dietary was adopted in which undermilled rice and beans were substituted for the polished rice. This change resulted in the absolute eradication of beri beri from the Philippine Scouts, a very notable achievement. The same measures carried out in civil life are meeting with equal success.

Probably the most important advance in recent years in the treatment of amebic dysentery is due to the researches of Captain Vedder who first demonstrated the efficacy evolved by the Army Board in its study of beri beri.

A large number of medical officers are contributors to the columns of the various medical and scientific journals. Among those who have written text books which have received international acceptance may be mentioned: Sternberg, Havard, LaGarde, Keefer, Lynch, Munson, Ashburn, Craig, and Vedder. To Sternberg's work is largely due the early development of the science of bacteriology in this country.

THE MEDICAL RESERVE CORPS

The Medical Reserve Corps was created by the Reorganization Act of April 23, 1908, to take the place of the Acting Assistant Surgeons and Contract Surgeons of former days, who were civilian physicians attached to the Army but without definite military status or authority. They now have the rank of First Lieutenants and their commissions "confer" upon the holders all the authority, rights and privileges of commissioned officers of like grade in the Medical Corps of the United States Army, except promotions and retirement, but only when called into active duty and during the period of such active duty. [This Corps will cease to exist on June 3, 1917. Members thereof may then be commissioned in the Officers' Reserve Corps.]

THE DENTAL CORPS

The Dental Corps was created by the Act of March 3, 1911, and consists of Dental Surgeons and Acting Dental Surgeons,

the total number of which together cannot exceed the proportion of one to each thousand of the actual enlisted strength of the Army, or 187. All original appointments to the Corps are made as Acting Dental Surgeons after passing a satisfactory physical and professional examination before a board composed of a medical officer and two dental surgeons. Applicants must be citizens of the United States between twenty-one and twenty-seven years of age and graduates of a standard dental college. Acting Dental Surgeons who have served in a satisfactory manner for three years are eligible, after passing a satisfactory professional and physical examination, to be commissioned as First Lieutenants in the Dental Corps. Dental Surgeons have rank and pay of First Lieutenant during first eight years of service, that of Captain during the next sixteen years and thereafter that of Major.

THE VETERINARY CORPS

The Veterinary Corps consisting of Veterinarians, Assistant Veterinarians and Reserve Veterinarians consists of not to exceed two veterinarians to each regiment of cavalry, one for every three batteries of field artillery, one for each battalion of mounted engineers, 17 as inspectors of horses and mules and as veterinarians in the Quartermaster Corps, and 7 as inspectors of meats.

Veterinarians have the rank and pay of Second Lieutenants during the first five years of service, that of First Lieutenant during the next ten years, that of Captain for fifteen to twenty years' service, and that of Major after twenty years but not to exceed 7 Majors, 12 Captains, 34 First Lieutenants, 65 Second Lieutenants.

THE ARMY NURSE CORPS

The Army Nurse Corps was created by the Act of February 2, 1901, and amended by Act of March 3, 1910, by which a defi-

nite status was given to graduate female nurses who had previously been employed under contract service in the Army but had not been an established part thereof. At its head is a superintendent, Miss Dora Thompson, who, under direction of the Surgeon General, has general supervision of the Corps, her office being a part of the personnel division of the Surgeon General's office. The Corps normally is composed of 125 Chief Nurses, nurses, and reserve nurses in such number as may be needed for the military service. Their pay is $50 to $60 per month with food and quarters and $10 additional for foreign service. They are stationed only at General Hospitals and a few of the larger posts. Chief Nurses are appointed from members of the Nurse Corps by the Surgeon General upon the recommendation of the Superintendent and after a satisfactory examination, one being stationed at each hospital or station where nurses are on duty. This pay may be increased by authority of the Secretary of War not to exceed $30 per month. Applicants for appointment in the Nurse Corps are required to be graduates of acceptable training schools, having a theoretical and practical course of not less than two years and attached to a general hospital of not less than one hundred beds. They must pass satisfactory physical examination, preferably made by a medical officer and a professional examination conducted by the Superintendent. Appointments are made for three years and are renewed upon application by the nurse if her service has been of a satisfactory character. The uniform of the nurse which is always worn when on duty consists of a waist, belt, and skirt of suitable white material, bishop collar, and a white cap.

The history of expert nursing in the Army is of recent date, since trained nursing as a profession was not introduced into this country until 1873. Since the early days of the Republic women have been employed in the care of the sick, but the duties of the humble predecessors of the present nurses were quite different from those of their accomplished sisters of to-day and are now relegated to the hospital orderlies.

The enlisted force of the Medical Corps is recruited by original enlistment and by transfers from other branches of the service. The strength of this force is approximately five per cent. of the enlisted strength of the Army. This force consists of Master Hospital Sergeants, $75 to $99, hospital sergeants, $65 to $89, sergeants first class, $50 to $74, sergeants, $36 to $60, corporals, $24 to $42, cooks, $30 to $48, horseshoers, $30 to $48, saddlers, mechanics, and farriers, $21 to $39, privates, first class, $18 to $36, privates, $15 to $25.

One of the most important duties of the medical officers is the instruction of the enlisted men to which a certain number of hours every week throughout the year is given and which never ceases so long as the soldier is in the service in connection with his daily round of duties. This instruction covers the Articles of War, the orders, and regulations in regard to his behavior and bearing upon all occasions, bearer drill and field work, use of the first-aid packet and other articles contained in the Hospital Corps and orderly pouches, methods of transporting wounded in peace and war, the use and care of the field-hospital equipment and the pitching, striking, and packing of tents, riding and care of animals, and military sanitation, especially in the purification of water and proper disposal of excreta and wastes and the care of the person.

The Medical Corps has developed a portable water bag holding twenty gallons of water for field service. Into this quantity of water is emptied the contents of a small tube of sterilizing compound. This bag is carried folded as shown in the full page illustration of the bugler who has no rifle to carry.

Col. Jefferson R. Kean, M.C., Director of the Military Division American National Red Cross, has contributed the following historical data:

"The Medical Corps of the Army had its beginning July 27, 1775. After the battle of Bunker Hill, a field hospital was established at Cambridge. Subsequently general hospitals were established at Ticonderoga, N. Y. and at Williamsburg, Va.

"The first department consisted of the director general and chief physician, four surgeons, twenty surgeon's mates, an apothecary, a clerk, two storekeepers and a nurse to every ten sick. The monthly pay was director general, $120; the surgeon, $40; the surgeon's mate, $20; the storekeepers, $4; and the nurses, $2.

"A complete and elaborate organization of the Medical Department modeled on that of the British Army was adopted April, 1777.

"The war of 1812 brought an Army again into the field. The Medical Department was without a head, the surgeons not even having assimilated rank. Good medical administration was, therefore, impossible. In March, 1813, Congress created the positions of physician-and-surgeon general and apothecary general, the latter to act as assistant to the former and as medical purveyor. Many hospitals were established and broken up during the course of events. They were well administered, well supplied, and competent for the work thrown upon them.

"In 1821 a further advance was made in the organization of the department by consolidating the regimental surgeons with the staff surgeons so that the corps consisted simply of one Surgeon-General, eight surgeons with the rank and pay of regimental surgeons, and forty-five assistant surgeons with the pay of post surgeons. The system of employing surgeons under contract was then instituted.

"The Medical service of the Mexican War was performed with marked efficiency and devotion to duty.

"The thirteen years which intervened between the Mexican and the outbreak of the Civil War were years of activity and progress. An important advance in the standard of the examination for admission was made in 1849. In 1850 the Medical Department of the Army was first formally represented at the annual meeting of the American Medical Association.

"On January 1, 1861, the Army numbered 16,400 and the medcal officers 115, or seven-tenths of one per cent. of the whole.

"The medical history of the Civil War marks an epoch in military sanitary organization. The end of the Civil War found no less than 204 general hospitals containing 136,000 beds in operation in the territory of the United States over an area extending from Maine to Florida and westward beyond the Mississippi. The Medical Department during the Civil War disbursed over $47,000,000 and cared for 1,057,423 sick in its general hospitals alone not counting those that passed through the field and regimental hospitals.

"This great struggle has left behind it as monuments of the labors of the medical profession the Army Medical Museum and the great national institution known as the Library of the Surgeon-General's office. The record of their professional work is given in the 'Medical and Surgical History of the Rebellion' which, in spite of the advance of professional knowledge since that time, remains an inexhaustible mine of statistical information.

"The outbreak of the Spanish War in 1898 found the Medical Department with a personnel of 177 commissioned officers and 750 enlisted men. When a volunteer army of 250,000 men was mobilized and at the same time expeditions embracing practically the entire regular army was organized to attack the Spanish possessions of Porto Rico, Cuba, and the Philippines, it was immediately evident that if the regular regiments were to be cared for by regular medical officers but few would be left to organize the medical service of the volunteer armies. Each of the volunteer regiments brought with it into service three regimental surgeons and three hospital stewards, but no privates. The regimental and field hospitals had to be organized at the expense of this regimental medical personnel. As Congress failed to authorize the enlistment of Volunteer Hospital Corps men the situation in this respect became at once acute and was only partially relieved by the clumsy expedient of authorizing the transfer of men from the volunteer regiments to the regular Hospital Corps. This emergency was relieved in great measure

in the general and stationary hospitals by the employment of female trained nurses in large numbers.

"It was the accepted belief of military surgeons, as of the medical profession at large in 1898, that the principal and almost the only method of dissemination of typhoid fever was by polluted food and water supplies. A typhoid epidemic swept through all the camps in the summer of 1898 regardless of the fact that for many of them the water supply was artesian.

"The true conditions under which typhoid fever spread as a camp disease were not understood until the publication some years later of the remarkable study of these epidemics made by Major Walter Reed of the Medical Corps and Majors Vaughan and Shakespeare of the Volunteer Medical Service, which covered 20,738 cases of typhoid fever among 107,973 officers and men in 92 regiments. The military and sanitary lessons of this war were most instructive."

The Walter Reed General Hospital maintained in Washington was named in commemoration of the services rendered to medical science and humanity by Major Reed, M.C.

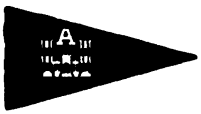
The annual report of Major General Gorgas for 1915 contains the following statistical data relative to the health of the army:

"The health of the Army for 1915 established a new low record. The death rate receded to 4.40 per thousand and tuberculosis to 3.5 per thousand.

"Satisfactory progress was made in checking the rates of certain diseases, which in the past took a considerable toll. For example, there were but seven cases of typhoid fever during the year among the 98,649 men stationed in the United States, Alaska, the Philippines, Hawaii, Panama, Porto Rico, and China, including the Philippine Scouts and the Porto Rican Regiment. Of these seven cases but two had received the complete course of vaccine treatment. The number of operations performed on officers and enlisted men was 5,604."

CHAPTER X

CORPS OF ENGINEERS



THE Corps of Engineers consists of a Chief of Engineers (Brigadier General William M. Black, C.E.) 23 Colonels, 30 Lieutenant Colonels, 72 Majors, 152 Captains, 148 First Lieutenants, 79 Second Lieutenants, 7 Chaplains and enlisted men organized into Regiments, Battalions, and Companies each as indicated in the accompanying diagrams.

The duties of the Corps of Engineers comprise reconnoitering and surveying for military purposes, including the laying out of camps; selection of sites, and formation of plans and estimates for military defenses; construction and repair of fortifications and their accessories; the supervision of the location of all buildings in or within one mile of any fortification; the installation of electric-power plants and electric-power cable connected with seacoast batteries, and furnishing the necessary electrical supplies connected therewith; planning and superintending of defensive or offensive works of troops in the field; examination of routes of communications for supplies and for military movements; construction and repair of military roads, railroads, and bridges; and military demolitions. In time of war, within the theatre of operations.

It has charge of the location, design and construction of wharves, piers, landings, storehouses, hospitals, and other structures of general interest; and of the construction, maintenance, and repair of roads, ferries, bridges, and incidental structures; and of the construction, maintenance, and operation

Diagram Showing Organization of Engineer Troops

Battalion of Mounted Engineers.

1 Major
2 Captains
1 1st Lieutenant
1 Master Engineer, (Senior Grade) (+1) $75
3 " " , (Junior Grade) (+3) $65
1 Battalion Sergeant Major $45
1 Battalion Supply Sergeant $45
(2 Sergeants) $36
1 Corporal $24
1 Wagoner for each authorized wagon $21

Company "A" | Company "B" | Company "C"

Company "B":
1 Captain
2 1st Lieutenants } Commissioned
1 2nd Lieutenants
1 1st Sergeant $45
2 Sergeants 1st class $45
1 Mess Sergeant $36
1 Supply Sergeant $36
1 Stable Sergeant $36
4 Sergeants (+2) $36
8 Corporals (+3) $24
2 Horseshoers $30
1 Saddler $21
2 Cooks $30
2 Buglers $15
12 Privates 1st class (+8) $18
37 Privates (+24) $15

Each All Company Mounted

Strength of Engineer Units

		Regiment	Battalion		Company	
			Foot	Mounted	Foot	Mounted
Peace Strength	Commissioned	33	14	16	4	16
	Enlisted	698	331	241	109	74
War Strength	Commissioned	33	14	16	4	16
	Enlisted	1038	499	338	164	111

Walter Reed General Hospital, Washington, D. C.

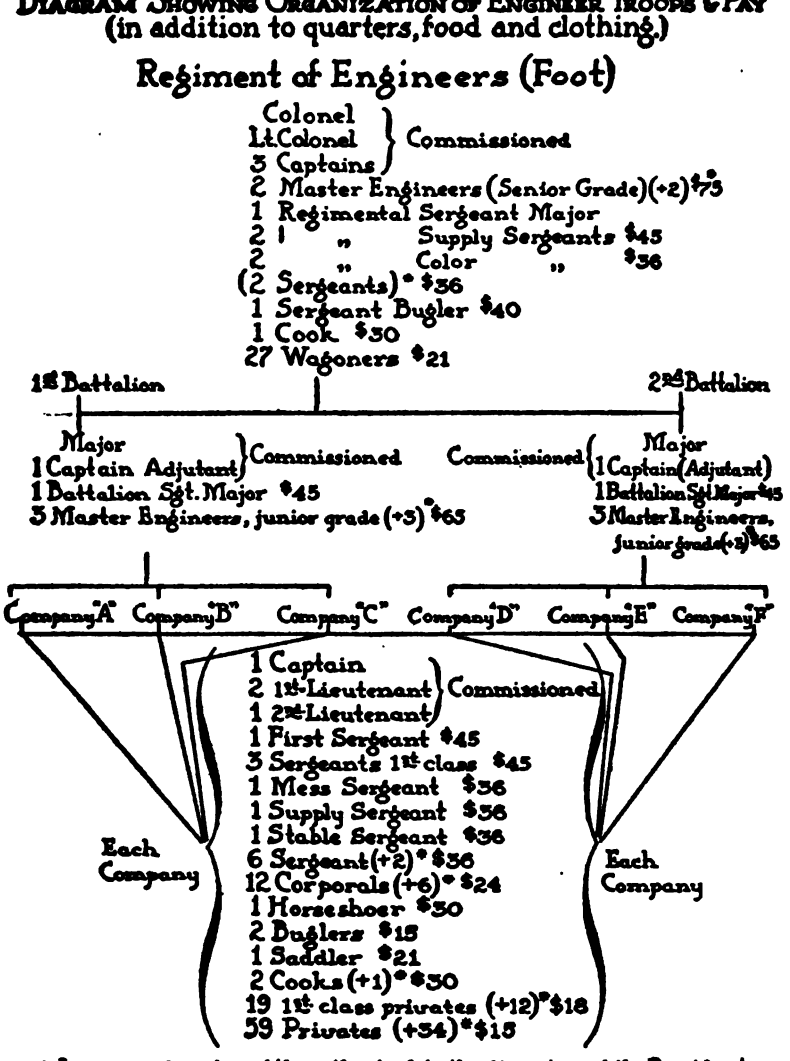
Major Russell, M. C., inoculating civilians against typhoid fever

Pack section Engineer Company which carries carpenters, pioneer, entrenching, and demolition outfits for hasty work where tool wagon can't go

Company of engineers erecting temporary mess shelter

Engineer troops telephoning and using observation instruments in the field

Diagram Showing Organization of Engineer Troops & Pay
(in addition to quarters, food and clothing.)



Increase in strength authorized in the discretion of the President.

of railroads under military control, including the construction and operation of armored trains.

The Corps of Engineers is also charged with the improvement of rivers and harbors; with matters arising under the laws for the protection and preservation of navigable waters, including the establishment of harbor lines, anchorage grounds, and rules and regulations therefor; rules and regulations for canals owned, operated, or maintained by the United States, for any public navigable channel improved under authority of Congress, and for the navigation of streams on which the floating of loose timber and sack rafts is the principal method of navigation. It attends to the issuance of permits for the construction, alteration, maintenance, and operation of bridges, for structures or work in navigable waters, and the removal of wrecks and other obstructions to navigation; with questions pertaining to the supervision of the harbor of New York and adjacent waters to prevent obstructive and injurious deposits; with surveying and charting the Great Lakes, the natural navigable waters of the New York State canals, Lake Champlain, the Lake of the Woods, and other boundary and connecting waters between said lake and Lake Superior; with the preservation of Niagara Falls; with public buildings and grounds in the District of Columbia; with the water supply of Washington, D. C.; with the construction of monuments and memorials; and with the construction of roads and bridges in the Yellowstone and Crater Lake National Parks.

It collects, arranges, and preserves all correspondence, reports, memoirs, estimates, plans, drawings, such deeds and titles as relate to Washington Aqueduct and public buildings and grounds in the District of Columbia, and models which concern or relate in any wise to the several duties above enumerated.

The Engineer Corps has reared many enduring monuments to its engineering and constructive skill in the form of public works and utilities. The greatest achievement is the successful completion of the Panama Canal. This huge task was accom-

plished under the personal supervision of Major General George W. Goethals while a Colonel of Engineers. Congress bestowed upon him the rank and pay of Major General as a reward for having accomplished this task in so masterly a manner. Officers who assisted General Goethals were also rewarded by Congress by increased rank and privilege of retirement.

The public works assigned by law to the Corps of Engineers afford the best possible practical engineering training for the great engineering operations of which modern war so largely consists and also provide a strong and well-distributed engineering organization having practical working knowledge of all parts of the country and its engineering resources, and instantly available for transfer to military construction work in war emergencies.

Before public money is spent in any of the civil improvements connected with rivers and harbors, very careful investigations are made. Congress directs a preliminary examination under the Chief of Engineers. An Engineer officer stationed near the locality makes a preliminary examination and renders a report, based on economic, commercial, and engineering investigations, with recommendation and estimate of cost. This report goes to the Division Engineer, who forwards it with his opinion to the Board of Engineers for Rivers and Harbors. This is a permanent board of five Engineer officers, of wide experience, sitting at Washington, D. C., after thorough investigation. This board passes upon the report and forwards it to the Chief of Engineers. Upon his recommendation, favorable or unfavorable, the Secretary of War transmits it to Congress for such action as that body may deem fit.

No new project can be authorized by the Engineer Department without the direction of Congress. Every safeguard is employed to prevent the advancement of projects not likely to prove of such value as to warrant its cost, but every opportunity is given to interested persons to be heard by all officers who pass upon the matter.

The magnitude of the engineering operations and organization of the Engineer Department may be seen from the following figures: during 1914 this department expended over $49,000,000 on public work, about half under contracts and about half by hired labor. About half of the total was for dredging or similar excavation, the aggregate amount of which in 1913 was about 213,000,000 cubic yards which exceeds the entire excavation of the Panama Canal, and would equal a prism forty-five feet wide and nine feet deep from New York to San Francisco.

The hired labor force of the Engineer Department exclusive of contractors' men exceeds 25,000 men. They are organized under officers of the Corps of Engineers in 56 engineer districts located in all the principal centres of engineer operations and supply. In these districts 617 separate works were carried on in connection with which there were in force 1,260 contracts. Fifty preliminary examinations and 38 surveys were made of proposed new works, and 153 works previously authorized were reëxamined under the direction of Congress. Over 2,200 permits for structures in and across navigable rivers were issued including 606 bridge permits. Over 160 wrecks endangering navigation were removed. Six hundred and sixty-five new contracts were made.

The floating plant consisting of 26 dredges, 190 steam tugs and survey boats, 328 gasoline tugs and survey boats and launches, 61 snag boats, together with a large number of barges, and minor craft, are owned and operated by the Engineer Department in connection with this work.

ENGINEERS IN WAR

While all this civil engineering experience is of direct value in war, the fundamental necessity in the military engineer is that he be a soldier both in discipline and in knowledge of military operations. The training of officers of the Corps of Engineers is obtained at the United States Military

Drill. Installing field searchlight

Pile driver improvised with pontoon material mounted on pontoon boats by Engineer troops

New type 6-inch howitzer, designed by Ordnance Department, being tested at Sandy Hook Proving Ground. Weight of projectile, 125 pounds, range 6,700 yards

Academy (or, in the case of civilian appointees, by a course in engineering at an approved technical school, which is a prerequisite to appointment), followed by training with troops, training at the Engineer School at Washington and at the Field Engineer School at Fort Leavenworth. All this military and theoretical training is consolidated and made practical by actual engineering work in the field and by experience in handling men and in controlling the forces of nature in the various public works assigned to the Engineer Department.

In campaign engineer troops are assigned, normally one pioneer regiment of six companies to each infantry division. These pioneer companies are organized and equipped as follows: 1 captain, 2 first lieutenants and 1 second lieutenant, with 164 enlisted men including 14 sergeants and 18 corporals. Of these 140 are fully equipped and trained as infantry, and in addition are trained in engineer duties connected with repair of roads, repair and construction of bridges, preparation of fords, repair of railroads; in laying out, getting materials for, and executing field fortifications both offensive and defensive such as intrenchments, redoubts, obstacles of all kinds, land mines, sapping, demolitions, clearings, etc.; 24 men are mounted on horses and equipped with rifle, pistol, sketching outfits, and accompanied by a pack section of five mules that carry tools and equipment for rapid pioneer operations on a smaller scale where the less mobile company tool wagons cannot go.

The demolition outfit with this mounted section is very complete and the reconnaissance and sketching can be done very rapidly and efficiently. For service with a cavalry division a battalion of mounted engineers is provided, of strength about one-half that of the foot battalions.

When two or more divisions are combined into a field army a pontoon battalion is attached, organized, and equipped as a pioneer battalion of engineers with the addition of light pontoon equipage sufficient for 372 feet of bridge and heavy pontoon equipage sufficient for 900 feet of bridge. All

engineer troops are trained for both pioneer and pontoon duty. They are provided with field searchlights, flares, etc., to light the battlefield at night.

In a field army each division of troops has a battalion of engineers called pioneers, and a senior engineer officer on the staff of the division commander.

A field engineering manual is supplied as a guide in the construction of field fortifications, the use of artificial cover, barbed-wire entanglements, and other forms of obstructions, revetting, mining, sapping, demolition tools and high explosives, bridge and road building, railroading, etc.

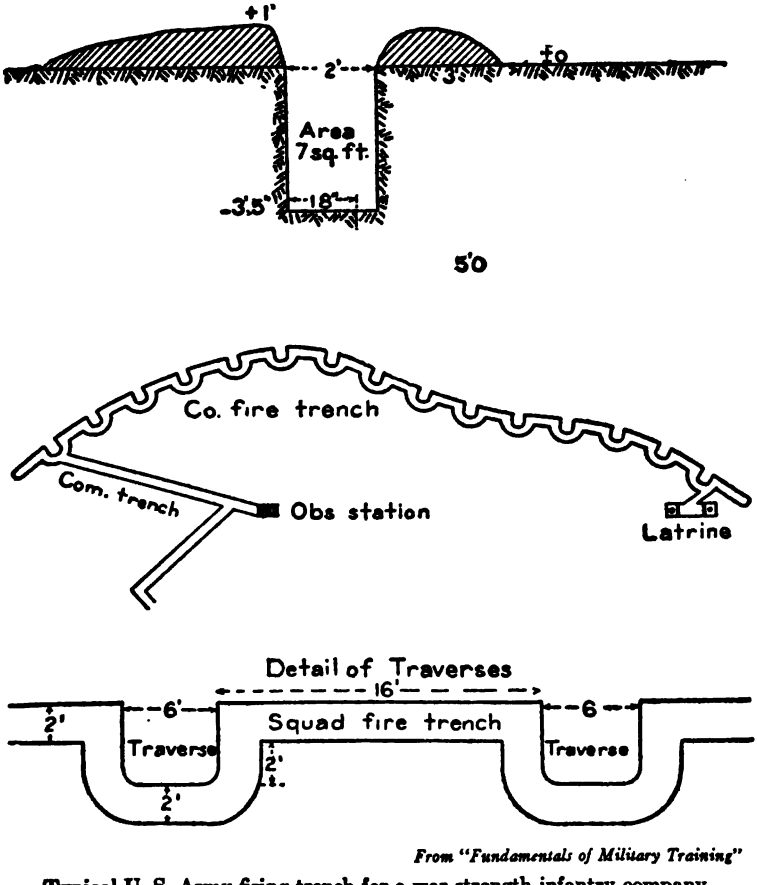
In addition to the training as soldiers, which is common to all arms, the training and instruction of engineer troops is industrial, mechanical, and practical and such as tends to qualify men as skilled laborers and artisans and thus promote their success in civil life after completing an enlistment.

Owing to the limited numbers of pioneer troops, only the more important engineering tasks are assigned to them. Each infantryman and cavalryman is equipped with individual entrenching tools, and field artillery with battery tools, and hasty entrenchment is practised by troops of all arms. The division engineer train has one wagon of engineer tools for each regiment of infantry carrying picks, shovels, axes, saws, sand bags, etc.

A typical United States Army firing-line trench for a war strength company of infantry (150 men) is reproduced by courtesy from "Fundamentals of Military Training." Major Lincoln C. Andrews, U. S. Cavalry, from special chapter on "The Engineer Corps," by Lieut. Colonel S. E. Cheney, C. E.

The communication trench is a deep zigzag trench or passageway leading to the rear where the reliefs, when not on the firing line, eat, sleep, and rest with proper protection from enfilading fire. Normally two companies would be resting while one company occupies the firing-line trench, it being necessary when in contact with the enemy to occupy the trench constantly.

Trench fighting on the various battlefronts of the European War is estimated at about 1,800 miles. The various armies virtually dug themselves into the earth and by sapping and tunneling carried on by the engineers often maintained trenches within talking distance of their foes. This type of warfare made it possible to keep up active operations throughout the



From "Fundamentals of Military Training"

Typical U. S. Army firing trench for a war strength infantry company of 150 men

winter. It renders cavalry useless for the time being and brings heavy field artillery and engineers into primary importance.

In the building of our seacoast defenses the Corps of Engineers designs and constructs all gun emplacements, including the ammunition serving devices, all fire-control stations and all steam and electric power plants, with the cables, conduits, and machines except the motors on gun carriages and for torpedo defense. The design and emplacement of coast defense searchlights is also under this corps.

The annual report for 1915 of General Dan C. Kingman, who retired from active service as Chief of Engineers of the Army, March 6, 1916, contains the following bearing upon the necessity of keeping our coast fortifications abreast of military science:

"It cannot be too emphatically stated that the art of fortification is a progressive one. It must continually grow to keep pace with the new discoveries which give it special advantages or to meet and offset progress in the development of naval vessels and armament against which the forts are expected to contend. However carefully planned and constructed, a battery must always pertain to the date when completed and must be out of date in so far as relates to things which have been discovered or developed since the battery was planned.

"Seacoast defenses are designed to fight naval vessels and to thus protect certain cities, harbors, or other utilities from bombardment by an enemy's vessels within any of the area covered by the seacoast guns. In locating and designing batteries the range and power of the naval guns, as well as the number of such guns which can be brought against these fortifications, must be given consideration, and, unless our fortifications are to become obsolete, changes in any of the elements of naval offense must be met by corresponding changes in seacoast batteries, and these changes must in most cases consist not merely of modifying the older emplacements by affording additional protection for the gun platforms and magazines against the increased power of naval guns, or in mounting more powerful

guns in these older emplacements, but rather in the construction of absolutely new batteries in new locations. The older batteries were necessarily designed and located so as to obtain the maximum effect with guns of the range of those to be mounted in these emplacements. If the guns which were to be mounted in these older batteries had been of longer range, the locations of the batteries would in many cases have been different, and if more powerful and longer-range guns be mounted in these older batteries a large proportion of this increased power and range will in most cases be lost.

"For the above reasons a fixed project for seacoast defense can never be adequate, and its obsolence must begin before it can be completed. It is believed that our seacoast defenses can best be kept sufficiently up to date by the adoption of a regular annual program which will provide for replacing each year from four to ten per cent. of our older emplacements, depending upon the size and condition of the older equipment and the rate of progress being made in naval offense."

"Let no man dare to say, if he would speak the truth, that the question of preparation for national defense is a question of war or of peace.

"If there is one passion more deep-seated in the hearts of our fellow countrymen than another, it is the passion for peace. No nation in the world ever more instinctively turned away from the thought of war than this nation to which we belong.

"But there is something that the American people love better than they love peace. They love principles upon which their political life is founded. They are ready at any time to fight for the vindication of their character and of their honor. They will at no time seek a contest, but they will at no time cravenly avoid it, because if there is one thing that the country ought to fight for and that every nation ought to fight for, it is the integrity of its own convictions.

"We must all of us think, from this time out, in terms of the world, and must learn what it is that America has set out to maintain as a standard bearer for all those who love liberty and justice and the righteousness of political action."

—Woodrow Wilson.

CHAPTER XI

THE ORDNANCE DEPARTMENT

Brigadier General William Crozier, O. D., has been the Chief of Ordnance since 1901. He is assisted by 10 Colonels, 15 Lieutenant Colonels, 32 Majors, 42 Captains, 42 First Lieutenants.

The Ordnance Department provides, preserves, distributes, and accounts for all the munitions of war required for the fortresses of the country, the armies in the field, and for the militia, and establishes and maintains arsenals and depots for their manufacture and safe-keeping. These duties include that of determining the general principles of construction and of prescribing in detail the models and forms of all military weapons employed in war. They include also the duties of prescribing the regulations for the proof and inspection of all these weapons, for maintaining uniformity in their fabrication, and for insuring their good quality.

Ordnance and ordnance stores include cannon, artillery, ammunition, artillery carriages, vehicles and equipment, small arms, ammunition and accoutrements; horse equipments and harness for the field artillery and horse equipments for cavalry and mounted men; tools, machinery, and materials for the ordnance service; and all property of whatever nature supplied to the military establishments by the Ordnance Department. The Ordnance Department supplies practically all the small arms and equipment of the Navy and Marine Corps.

Long experience has proved that these articles of ordnance equipment can be most economically and satisfactorily manu-

factured at Government arsenals. There have not been established arsenals in number and capacity to provide the enormous quantities of ordnance material and equipment required, thus making it necessary to fall back upon private factories for much of this kind of supplies, even in time of peace, and the capacity of these establishments is entirely inadequate to meet the demands of a large war.

In its various work it employs over 5,500 workmen in six great establishments which are guarded and generally cared for by 600 enlisted men. Much of the work is of a scientific character involving the application of chemistry, mechanics, and electricity. To translate theoretical study into drawings and specifications which precede production many draftsmen are employed. For the last two years the amount expended by the Ordnance Department has averaged nearly $15,000,000 annually.

The following establishments are maintained by the Ordnance Department:

Watertown Arsenal, Watertown, Mass., where are manufactured seacoast gun carriages and projectiles.

Springfield Armory, at Springfield, Mass., where are manufactured rifles, pistols, revolvers, and machine guns.

Watervliet Arsenal, Watervliet, N. Y., which is the gun factory for the manufacture of cannon of all calibers for field and seacoast artillery.

Picatinny Arsenal, near Dover, N. J., is the army powder factory and here are manufactured powders for all the types of ordnance used by the army from the 30-caliber rifle to the 16-inch gun and high explosives for filling projectiles. At this arsenal are maintained large reserves of powders and raw materials necessary for their manufacture.

Frankfort Arsenal, at Bridesburg, Pa., a suburb of Philadelphia, includes in its product, ammunition for both the mobile and seacoast artillery and for small arms together with the many complicated mechanical devices now used as essential

accessories in warfare including range-finding instruments, fire-control material, telescopic sights, and fuze setters.

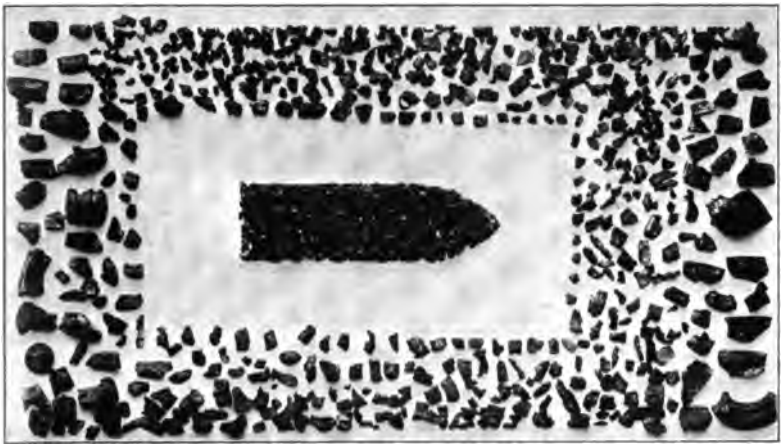
Rock Island Arsenal near Rock Island, Ill., on an island in the Mississippi River, manufactures the personal and horse equipment for the soldier and carriages and vehicles for mobile artillery. It also includes a plant for the manufacture of small arms.

The Sandy Hook Proving Ground, at Sandy Hook, N. J., is maintained as a proving ground for the test of all the ordnance material manufactured or purchased by the Department and for the test of experimental material under development. As all material, including guns, carriages, ammunition, is manufactured or procured under specifications requiring samples as manufactured to be actually tested under service conditions, an extensive and thoroughly equipped plant must be maintained for the purpose.

In addition to the above establishments, whose primary purpose is manufacturing, the Ordnance Department maintains the following establishments for the purpose of purchasing, storing, issuing, and repairing ordnance and ordnance stores for the troops and fortifications in the districts or departments to which they are assigned:

New York Arsenal, Governor's Island, New York Harbor.
Augusta Arsenal, Augusta, Ga.
San Antonio Arsenal, San Antonio, Tex.
Benicia Arsenal, Benicia, California.
Manila Ordnance Depot, Manila, Philippine Islands.
Hawaiian Ordnance Depot, Honolulu, H. T.
Panama Ordnance Depot, Canal Zone.

One of the greatest achievements of the Ordnance Department was the design and construction of the 16-inch gun and carriage. This gun, which weighs 127 tons and is 49 feet long, was finished in 1901. It was constructed at the United States Arsenal at Watervliet, N. Y., and upon completion was taken to the proving grounds at Sandy Hook for test, meeting the severest re-



Fragmentation of exploded 3 in. common steel shell, 2,378 pieces

Ordnance Department 16 in. rifle

Wire section of a field company

Signaling by heliograph

Pack radio set

quirements. Although this rifle is fifteen years old, its known efficiency as a defensive, direct-fire weapon has not been excelled by any gun of any foreign country. This gun, its carriage and emplacement will cost about a half million dollars. Its range and energy will, of course, vary with the amount and quality of the powder used. With a charge of smokeless powder, weighing 675 pounds giving a maximum powder pressure of between 37,000 and 38,000 pounds per square inch, the gun will give a projectile weighing 2,400 pounds, a muzzle velocity of 2,300 feet per second, developing a muzzle energy of 88,000 foot-tons. When fired at its maximum range the projectile reaches an extreme height of 30,516 feet or 590 feet higher than the combined height of Mont Blanc and Pike's Peak.

This 16-inch breech-loading rifle is the first of a number of gigantic weapons which are to be constructed for the seacoast defense of the United States. The Endicott Board in 1886 reached the conclusion that a number of these powerful weapons should be provided for the protection of the principal harbors of the United States, and the gun described above was constructed in inaugurating this project. The Endicott Board's plan was later revised by the substitution of 14-inch guns for 16-inch guns, and a number of the former have been built and mounted in the seacoast fortifications, while the War Department decided to place the 16-inch gun at the entrance of the Panama Canal. The War Department has recently decided to install 16-inch guns in certain of the more important seacoast fortifications, and the guns to be built for this purpose will be vastly more powerful than their prototype described above.

General Crozier has brought the manufacturing functions of the Ordnance Department to a condition of very high efficiency by putting into effect scientific methods of shop management which have resulted in reducing the manufacturing cost of such material, improving the quality and quantity of the products of these plants, and at the same time increasing materi-

ally the wages paid employees, and improving labor conditions in general. The success attending his efforts has attracted wide attention among those interested in the improvement of economic and industrial conditions. Under legislation obtained by the Ordnance Department it is possible to encourage the interest of the civilian employees of the arsenals by awarding cash payments for meritorious suggestions submitted by them for reducing the cost of manufacture by making improvements in methods or operations. In the past few years many such payments have been made.

The following items of general interest appear in the annual report of the Chief of Ordnance for 1915:

"The reserve ordnance equipment required for a mobile army of 450,000 officers and men, except field artillery, was considerably increased during the year.

"Of the 323 batteries of Field Artillery required for such an army the necessary number of field guns, carriages, limbers and equipment for 228 batteries are now on hand or under manufacture. This exceeds the number of batteries now on hand. It was pointed out that this country is dependent upon Chile for its supply of nitric acid and that a source of supply should be established in this country, there being in operation in Europe plants for the fixation of atmospheric nitrogen rendering it available in the manufacture of nitric acid.

"It appears that although field artillery has played an important rôle in all modern wars, its use has now been extended to the point where it becomes a question as to whether it does not actually make the main attack, which is rendered permanently effective by the infantry advance, instead of, as formerly considered, being used to prepare the way for the main attack by the infantry. In any case, the employment of field artillery has undoubtedly been greatly extended. The amount of ammunition used by it has been increased beyond anything previously estimated, and the heavier calibers have come into much greater prominence due to their ability to destroy the

very excellent trenches possible to construct in a comparatively short time.

"The German and Austrian Armies in their campaigns through Galicia in 1915 used heavy artillery very largely and were able to keep it up with the advancing troops and to keep it supplied with ammunition. It consequently appears fairly definite that an increase in the proportion of the heavier calibers over what was formerly considered necessary will be adopted.

"The construction of mounts for guns, both seacoast and field a few years ago, involved no necessity for serious consideration of long ranges because of the inability to determine the striking point of the projectiles and consequent impracticability of correction of fire. The ranges gradually increased, however, with the introduction of powerful optical instruments, but at the beginning of the war it was generally held that the limit of effective firing was certainly not greater than the distance at which these instruments were useful, and that in general even at such ranges the probability of hitting, due to inaccuracy of observation, atmospheric changes, unavoidable variations in powder and material, etc., was so small as not to justify the expenditure of ammunition.

"The development of the aeroplane and its use in directing fire has further extended the limits at which observations may be had, so that the problem of effective firing at great distances is now reduced to a question as to whether the material will respond sufficiently to the corrections given by the observer, and whether the percentage of hits which may be expected under favorable conditions at the extreme ranges justifies the expenditure of ammunition. The evidence so far obtained indicates that both of these questions are believed by the powers at war to have been answered in the affirmative. It is known that the belligerents are firing at greater ranges than have heretofore been considered practicable, and that in some cases effective results have been obtained. As a result, older designs of material are being modified for increased range as far as practicable,

and new designs are being laid down for both field and seacoast carriages, to give greater range than considered necessary in the past, and also for larger calibers with heavier projectiles.

"It has been generally considered that machine guns were mainly valuable on the defensive and that the number required was consequently not very great. At least one of the belligerents has used these guns on the offensive as flank supports for advancing troops, in addition to employing them extensively on the defensive, and has supplied them in quantities much greater than any heretofore held to be called for. This use has been so effective as to point strongly to the necessity for these guns in very much larger quantity than previously considered advisable, and to a revision of views as to the method in which they should be employed.

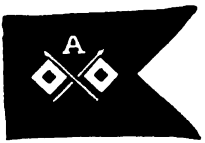
"An absolute necessity is that they should be sufficiently light so that they can be carried a considerable distance by hand, and this condition is being met by recent manufacturers of all guns of this type so far as known."

The enlisted personnel of the Ordnance Department is organized as detachments for duty at arsenals, depots, and the Sandy Hook Proving Ground. Their duties are more or less non-military, but technical, and have mainly do to with the upkeep of storehouses, the shipment of ordnance supplies, the handling and testing of explosives, as manning details for proof firing of guns and carriages of all types, and as watchmen.

"At the bottom, this question of preparedness is a question of national existence. We must decide whether we believe in resistance or non-resistance to an invader. There is always the possibility of an attack by some foreign country."—FRANKLIN D. ROOSEVELT, Assistant Secretary of the Navy.

CHAPTER XII

THE SIGNAL CORPS



Guidon of Signal Corps Field Company.

THE Signal Corps has been presided over by Brigadier General George P. Scriven, S. C., since February 4, 1913. He is assisted by 1 Colonel, 2 Lieutenant Colonels, 6 Majors, 18 Captains, 18 First Lieutenants. The enlisted personnel consists of 36 Master Signal Electricians, 132 First Class Sergeants, 144 Sergeants, 156 Corporals, 24 Cooks, 552 Privates, first class, and 168 Privates.

The Chief Signal Officer directs the operations of the Aviation Section, the personnel of which is constantly changing as more officers are detailed to it.

The Chief Signal Officer is charged with the construction, repair, and operation of military cables, telegraphic and telephonic lines and radio installations, field telegraph trains, balloon trains, and furnishing and installing instruments and connecting cables used for transmitting information in connection with fire control at seacoast fortifications; with the preparation, distribution, and revision of the War Department telegraph code; with the supervision of instruction in military signaling and telegraphy; with the procurement, preservation, and distribution of the necessary supplies for the Signal Corps and for signaling installations of the seacoast defenses. He has charge of all military signal duties and of books, papers, and devices connected therewith, including telegraph and telephone apparatus and the necessary meteorological instruments for target ranges and other military uses; of collecting and transmitting

information for the army by telegraph or otherwise, and all other duties pertaining to military signaling.

To better prepare Junior Signal Officers for their exacting technical duties, the Army Signal School was organized at Fort Leavenworth, Kansas, in 1905 as part of The Army Service Schools. This course of instruction, covering a period of nine months, is given to about ten student officers each year. The object has been to perfect a system of electrical field lines of information whereby orders and information could be quickly transmitted between the larger units of an Army in the field; to train officers in the use of these lines, and to make research and original investigation into all matters pertaining to military signaling and to disseminate information thus obtained.

The practical work of this department is conducted in a well-equipped electrical laboratory or workshop. Each officer is assigned a workbench, tools, and apparatus and performs many experiments in electrical testing and measurements. Student officers are required to dismantle, "take to pieces," reassemble, and operate telephones, buzzers, dynamos, switchboards, oil engines, transformers, and many other pieces of apparatus in order to insure a thorough working knowledge of their construction and repair. The course of study is embraced in four departments, as follows:

1. The Department of Field Signaling.
2. The Department of Signal Engineering.
3. The Department of Topography.
4. The Department of Languages.

In connection with the Signal School a series of technical conferences is held semi-monthly for the report, criticism, and discussion of papers pertaining to military field signaling and signal engineering procured from current military journals or other available sources.

The functions of the Signal Corps in many respects are analogous to those of the line of the Army and require the organization of its enlisted personnel with detachments which

may readily operate with the mobile Army and auxiliary thereto.

The largest tactical unit employed is the battalion composed of three Signal Corps companies. It often happens that an individual signal man, most likely a private, is completely detached from all other units and left in charge of an important telegraph station. The annals of the Signal Corps abound in heroic and gallant service and fortitude at these isolated stations.

Our field army organization calls for a Signal Corps Battalion of three companies and an aero squadron with each division of troops and a Senior Signal Officer on the staff of the division commander. This officer also acts as censor at Headquarters and has charge of the code and cipher and the telegraph lines.

The field companies have separate though correlated duties as follows:

1. A wire company of 3 officers and 75 men with sufficient insulated wire to keep Division Headquarters constantly in communication with each of its three brigades operating to the front.

2. An outpost company as intended to be organized consists of 5 officers and 75 men (expert telegraph operators) equipped with light copper telegraph wire on breast reels and with portable field telephone and telegraph sets (called a buzzer) to keep the Brigade Commanders constantly in touch with their regimental commanders. This is indeed hazardous, dangerous duty calling for indomitable courage and resourcefulness in keeping up with the fighting units yet taking no part in the actual firing. Experience has taught that the telegraph service is the most reliable method of transmitting information from the firing line. It is insensible to the roar of battle, accurate, and speedy, and the human equation is under better control than with the telephone service.

3. A radio company of 3 officers and 75 men equipped with four pack sections carried on pack animals and two wheel radio

sets to accompany any detached unit operating independently such as the advanced cavalry columns of the punitive expedition now in Mexico.

Division Headquarters is connected with the Army base by a semi-permanent telegraph line carried on light poles. These lines are in charge of telegraph companies (4 officers and 139 men) equipped to handle a large volume of messages. Two telegraph companies constitute a telegraph battalion commanded by a Major. During our occupation of the Philippines over 10,000 miles of such telegraph lines have been erected and turned over to the Philippine government.

Guidon of Telegraph Company Signal Corps

The Signal Corps erected a cable system from Seattle to Alaska about twelve years ago and with connecting telegraph lines takes care of all of the government and commercial telegraph service throughout Alaska.

General Scriven assisted by his office force recently prepared under the caption "The Service of Information United States Army," an educational review of the nature, use, field of service, and organization of the Signal Corps of the Army, with an outline of its methods and technical apparatus and notes on the service of information and the organization of the aviation service of the leading foreign armies. In this volume of 179 pages (which may be had for the asking) General Scriven points out that although the art of war has not changed with the passing of years the science of war has changed enormously since the days of muzzle-loading guns, captive balloons, and messenger service. He also points out that perhaps no changes are as important as those involving electricity and air navigation since these two functions permit the rapid dissemination of information regarding events as they occur and have replaced the slow groping in the dark of contending forces of former years. He points out that it is the use of these two elements

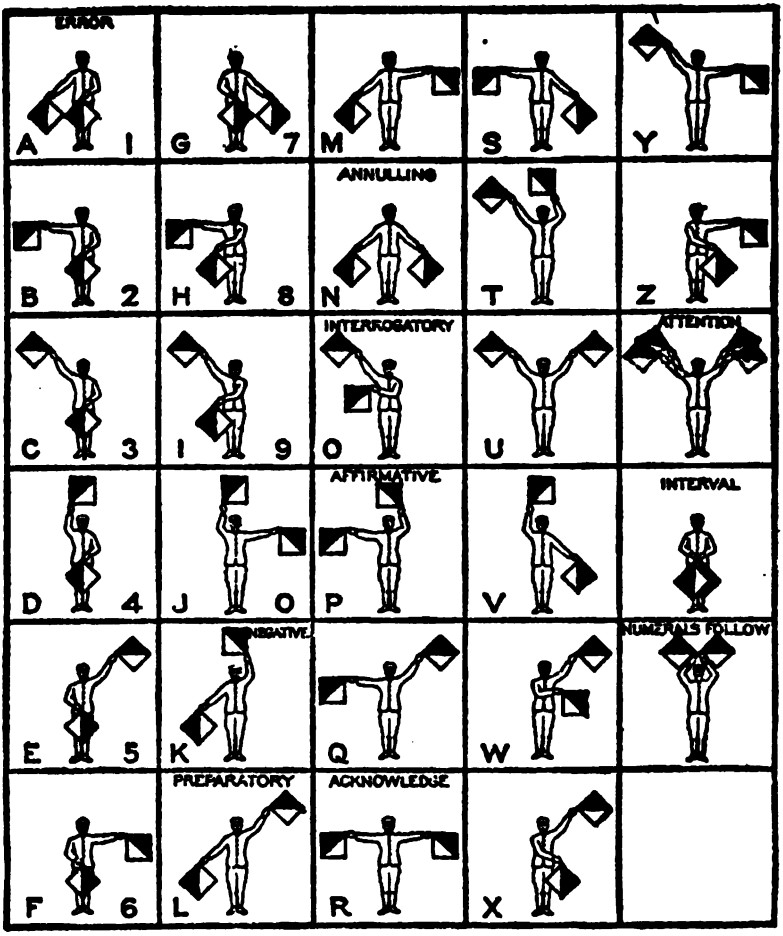
which his Corps is charged with as an auxiliary arm of service for the one main purpose—the speedy dissemination of military intelligence. He terms it the nerve system of the Army by which information is transmitted to the brain of the Army.

One of the most vital elements of an army is its system of communications. From newspaper and other accounts of the European War we read of most admirable systems of communication whereby the ruler of each country and the War and Navy Headquarters in the capitol of the country are constantly in touch with all parts of the theatre of war. Success or failure in battle often depends primarily upon the prompt transmission of information and orders.

For sending messages short distances the two-arm semaphore code is used with hand flags. This is a very simple and rapid method of transmitting orders and can be readily learned by any one. School boys quickly learn this form of visual signaling with home-made flags. All that is necessary is the code and two pieces of cloth about eighteen inches square tacked to sticks. Boy Scout organizations require proficiency in the use of this system of signaling.

For sending messages a considerable distance in the daytime when the sun is shining brightly the heliograph is used. This consists of a mirror mounted on a tripod with a shutter in front. By raising and lowering the shutter quickly or slowly the dot or dash is made. The only limitation on the use of the heliograph as to distance is the curvature of the earth. There are instances where messages have been sent from one mountain to another at a distance of over one hundred miles. At nighttime the signal lantern is used. The signal lantern has been used successfully for signaling at a distance of twenty-eight miles. For visual signaling as well as with the telegraph and cable lines, the International Morse or General Service Code is used in both Army and Navy.

Although in 1907–8 the basic patents of the Wright Brothers



Two-Arm Semaphore Code with Hand Flags

and their generosity and patriotism gave the United States a clear lead in aviation, Congress has been slow in appropriating adequately for its military development. European countries and Japan were all very quick to realize the military-naval potentialities of the aeroplane as a war utility. Following a successful test of a Wright Brothers' biplane in 1909 with Captain Benjamin D. Foulois, S. C., as a passenger, and who is now Dean of American aviators, this aeroplane was purchased by the War Department for $25,000. A temporary aviation school was then established at College Park, Md., under the supervision of the Wright Brothers, the first class consisting of three officers. In 1910 the Wright biplane and a Curtis biplane were sent to San Antonio, Texas, and used constantly in training aviators until 1911. Augusta, Ga., was also tried out as a winter school site. In 1912, San Diego, Calif., was selected as a most suitable location for an aviation school for the proper instruction and training of officers and enlisted men for the Aviation Corps. This training is both practical and theoretical. A motor is studied by taking it completely apart and reassembling, after thorough study and overhauling. Extensive practical work and instruction in locating engine faults is required. The instructor purposely disables a motor in every conceivable manner, and then requires the students to locate and remedy the faults. Aeroplanes are dissembled and assembled over and over again. Shop work in making metal fittings and instruction in metallurgy is sufficiently thorough to make each aviator an expert in these lines. The course in meteorology and navigation of the air affords a good working knowledge of these subjects.

The Aviation Section of the Signal Corps was established by Act of Congress, July 18, 1914. As now authorized its ultimate strength will be 114 officers selected from the line of the Army from unmarried officers under thirty years of age, and 820 enlisted men.

Enlisted men are given practical training and shop work to

qualify them as aviation mechanicians. When qualified they receive fifty per cent. increase in pay.

Guidon of Aero Squadron Signal Corps

The aviators begin their instruction by going up with an instructor in a hydro-aeroplane. When accustomed to the feel of the air, he is taught the use of the controls for straightaway flying; then to turn, bank, climb, and glide his machine. When proficient in all that he is put in a land machine and learns to rise from and alight on ground of varying conditions. Then cross-country flying. When proficiency in the use of navigating and recording instruments and indicators has been attained he is examined for rating as junior aviator.

The tactical unit of organization is the aero squadron which carries an increase in grade and fifty per cent. increase in pay. Upon qualifying as military aviator another increase in grade is authorized and seventy-five per cent. increase in pay of that grade.

The last Congress (1916) appropriated $13,281,666 for Army Aeronautics.

The first unit to be turned out by the San Diego school was the 1st Aero Squadron (2 companies, 8 machines, etc.) sent to Fort Sill to coöperate with the field artillery, December, 1915. One company of the squadron was later dispatched to Brownsville, Texas, for scout duty on the border, and the entire squadron now has station at Fort Sam Houston, Texas. It went into Mexico with the Punitive Expedition in March, 1916. A company has been sent to Manila; and another one will be organized for the Canal Zone, and a third for Hawaii.

The Aero Squadron to be attached to a division consists of three companies commanded by a field officer. Each company consists of 6 officers and 39 enlisted men, 4 aeroplanes, several reserve machines, spare parts, etc.

Air craft are now employed for strategical and tactical reconnaissance, and the prevention of reconnaissance by the

enemy air craft; for the direction and control of the fire of the artillery; for the destruction of the enemy's personnel and material by explosive and incendiary missiles, darts, bombs, etc.; and for the rapid transportation of superior commanding officers and dispatches.

Oversea companies are equipped with hydroaeroplanes. As soon as funds permit it is proposed to equip a squadron with twelve machines in activity, twelve replacement machines, and twelve in reserve, with the needed complement of officers, men, and auxiliary equipment.

It is interesting to note that the officers of the Aviation Section of the Signal Corps, despite the handicaps they labor under, during the fiscal year 1915 established one world's record and three American records for altitude or duration of flight. Altogether the Aviation Section made 3,458 flights of a total duration of 1,269 hours and 50 minutes, while 1,730 passengers were carried. The records are as follows:

September 26, 1911, Lieutenant T. DeW. Milling made a world's duration record for pilot and two passengers. Time 1 hour, 54 minutes., 42 3-5 seconds.

March 28, 1913, Lieutenant Milling made American record cross-country flight, pilot and 1 passenger, 220 miles.

The flight of March 28, 1913, was also an American record for endurance of pilot and 1 passenger. Time 4 hours., 22 minutes.

October 8, 1914, Capt. H. LeR. Muller, S. C. established a new American altitude record for pilot flying alone by reaching an altitude of 17,441 feet. Duration of flight, 2 hours, 27 minutes.

January 5, 1915, First Lieut. J. E. Carberry, S. C. pilot and Second Lieut. Arthur R. Christie 22nd. Inf., passenger, established a new American altitude record for pilot and passenger by reaching an altitude of 11,690 feet. Duration of flight, 1 hour and 13 minutes.

January 15, 1915, First Lieut. B. Q. Jones, S. C. established a new American endurance record by making a flight

of 8 hours, 53 minutes, the flight lasting from 7:52 A. M. to 4:45 P. M.

February 20, 1915, Corporal Smith, attached to the United States Signal Corps Aviation School at North Island, established what is declared to be a record endurance flight for hydro-aeroplanes. He remained in the air 8 hours and 42 minutes.

March 12, 1915, First Lieut. B. Q. Jones, S. C., Corporals Hale and Houser, S. C., as passengers, established a new world's endurance record for pilot and two passengers by making a flight of 7 hours and 5 minutes, the flight lasting from 10:02 A. M. to 5:07 P. M.

September 17, 1915, Lieut. W. R. Taliaferro made an American record for pilot alone. Time, 9 hours, 48 minutes.

The Aero Squadron in command of Capt. Benjamin D. Foulois operating with the punitive expedition in Mexico rendered most valuable and gallant service under great handicaps.

One of the most serious technical problems that confronts the aviation service is the development of a reliable motor. Up to the present no American-built motors have proved entirely reliable for air service.

The present war in Europe has developed three separate types of aeroplanes—the reconnaissance and fire-control machine, the combat machine, and the pursuit machine.

The organisation of the aviation units in the foreign armies comprises a squadron of 12 machines as the basis for organization, 8 of these machines to be of the reconnaissance type and 2 each of the pursuit and combat types.

The life of an aeroplane is about one year, and the annual upkeep about four or five thousand dollars. The War Department has *owned seventy-five machines* (aeroplanes and hydros). The total number of flights from January 1, 1916, to May 20, 1916, was 2,975, with a total time in the air of 1,399 hours, 27 minutes. There are about 350 licensed civilian aeroplane fliers in the United States.

The governors of the Aero Club of America are attempting

to secure money by public subscription to supply additional aeroplanes. The movement has the approval of the militia commanders of many states. Germany raised $1,800,000 and France $1,220,000 by public subscription in 1912. Germany used these funds to train aviation pilots and encourage the general development of aviation. A subsidy of $2,000 for each pilot trained and machine furnished resulted in an increase from 230 pilots at the end of 1912 to 600 a year later, and an increase from 20 to 50 aeroplane constructors. The French used their funds to purchase aeroplanes, a total of 209 being purchased.

In the Field Machine Shop of the First Aero Squadron all of its tools are motor driven. The dynamo obtains its energy from the forward wheel and furnishes the electric power to drive the tools. The machinery may be removed and placed on the ground or in the house or under canvas—anywhere alongside of the road where it is necessary to establish the repair plant. When it was proposed to construct this moving machine shop proposals were obtained from various manufactures, and the price asked for the complete outfit was $15,000. The Signal Corps was able to do the work and obtain the vehicle as ready for service by utilizing its own labor and purchasing the material for $4,800.

A notable achievement of the Army Aviation Corps was the transfer of the first aero squadron from its station at Fort Sill, Okla., to Fort Sam Houston, Texas, under the command of Captain B. D. Foulois. He is our most experienced aviator, having made a total of about 1,200 flights. The incident furnished the first occasion of the movement of such an organization intact by the use of its own facilities for transportation, over a distance of some 500 miles. The six reconnaissance tractor aeroplanes of the squadron stopped over night at Wichita Falls, Fort Worth, Waco, and Austin, the length of the daily journeys being limited by the distance that could be made in a day by the land vehicles over the unsatisfactory roads. The land transportation consisted of eight motor trucks, two

trailers, and one passenger car, which carried the enlisted personnel, repair supplies, camp equipage, subsistence, etc.

The only delay was during two days owing to unfavorable weather conditions, over which the aviators, of course, had no control. This squadron took station at Fort Sam Houston where quarters for fourteen officers, barracks, hangars for ten aeroplanes, administration building, storehouse, and shops have been provided.

A FEW FOREIGN NEWS ITEMS INDICATIVE OF THE DEVELOPMENT OF AERONAUTICS ABROAD

German aeroplanes dropped bombs from a great height, in one case of 9,000 feet, on Lillers, St. Omar, and Estaires. No military damage was done. A Zeppelin raid on Paris (four airships) came to naught. Two ships were driven off before reaching Paris, the other two attacked by aircraft guns did no more than pass over the outlying districts of the northwest of the city. Bombs were dropped on the station, Conflans-Jarny and the adjoining railway lines.

The effect of the British artillery at Neuve Chapelle was due in no small measure to the air service. Owing to the misty weather prevailing, aviators were compelled to descend as low as 800 feet above the hostile batteries.

Zeppelin L-5 is announced to have overhauled the Dutch ship *Helena* at sea on February 16th. The bombs dropped on Calais, February 15th, suggest a powerful explosive, one of the craters made being 18 feet in diameter. The cardinal weakness of the Zeppelin lies in its inability to operate in daylight through fear of hostile aeroplanes; by night, seeing is difficult.

Aeroplanes flying over the German lines in the La Bassee district succeeded in locating six batteries, which in a few minutes were shelled by the French artillery.

Russian aviators assisted the retreat of a division by continued dropping of letters containing valuable information; and

when ammunition began to fail, brought up considerable quantities from the distant rear. The boxes were wrapped in rags and dropped within reach of the troops. A Zeppelin on patrol duty over Cologne, protecting the military bridges of the Rhine, is reported as blown down by a storm and damaged beyond repair.

The value of the air service in the Neuve Chapelle fight is confirmed: "Not a gun was laid, not a body of troops moved without being detected" by airmen.

Communication between Przemysl and the Austrian lines seems to have been maintained almost daily by means of aviators, who would take out letters and bring back stores. One of them was able to carry as much as 4 cwt. in his machine.

An aerial battle in which twenty aeroplanes were engaged on both sides took place March 21, 1915, between Lorrach and Mulhausen. The French came from the Vosges and the Germans from the Black Forest. German forts and batteries opened on the advancing French squadron.

From a statement by Baron D'Arcy, the French use three classes of aeroplanes: destroyers, artillery spotter, and scout. The destroyers are pushers, have a gun in front, carry bombs and wireless apparatus, fly at 2,000 meters, and need not armor. The artillery spotters fly at 1,000 meters in observation, and are armored against rifle bullets. They also carry wireless. To enable them to fly slowly and climb quickly variable speed is being developed. The scouts used on reconnaissance, and as messengers, are about eighty-mile machines, operated by one man armed with rifle or revolver. Higher speed offers difficulty in landing. A few higher speed machines are in use principally near Paris.

"We must heed the lessons of this European War in order to make sure that in this country government of the people by the people and for the people shall not perish."—Alton B. Parker.

CHAPTER XIII

THE BUREAU OF INSULAR AFFAIRS

THE PHILIPPINE ISLANDS, AND PORTO RICO

THE Bureau of Insular Affairs, presided over by Brigadier General Frank McIntyre, United States Army, Chief of Bureau, was established by Act of Congress, July 1, 1902, to take charge of all matters pertaining to the Civil Government in the island possessions of the United States subject to the jurisdiction of the War Department. At the present time this includes the Philippine Islands and Porto Rico, which came into possession of the United States as a result of the Spanish American War. Similar functions are exercised by the Navy Department over the islands of Guam and Tutuila.

This bureau is the depository of the civil records of the Government of occupation of Cuba (January 1, 1899, to May 20, 1902) and of the Expedition to Vera Cruz, Mexico, in 1914. During the period of provisional government in Cuba by the United States (September 29, 1906, to January 28, 1909) it had certain functions to perform in connection therewith.

Under the convention entered into between the United States and Santo Domingo, February 8, 1907, the Bureau exercises immediate supervision and control of the customs receivership of that republic. This arrangement illustrates a practical application of the Monroe Doctrine on the part of the United States in safeguarding both the interest of Europeans in this Western Hemisphere republic, and the interests of that republic itself. This Bureau is a clearing house in the United States for the Philippine and Porto Rican governments. The fiscal

transactions aggregate fifteen millions annually. It attends to the purchase and shipment of supplies for these governments and to the appointment in the United States of Americans to positions under the Philippine Government. It gathers statistical data of insular imports, exports, shipping, and immigration.

The following items compiled from the annual report of General McIntyre for 1915 and from a special report on the Philippine Islands in 1913, will give a general idea of the beneficent civil government established and of some of its results affecting the health, education, welfare, and prosperity of the Filipinos and Porto Ricans under American rule.

The total value of imports in 1915 for the Philippine Islands was $48,588,653, the exports $48,689,634. The principal staple articles exported are sugar, hemp, copra (dried cocoanut meat), and cigars, about one-half of which came to United States. The present bonded indebtedness of the Philippine Government is $16,125,000. The currency used is silver coin and certificates.

The Filipino to-day controls absolutely his municipal government which means, from the American standpoint, the municipal and county governments.

In the provinces, which correspond to the states of the Union, the governing body is a board, two members of which are elected by the voters of the province, and the third appointed by the Governor General. The provincial treasurer is a civil service official and has been generally an American, though a number of provinces have had Filipino treasurers.

In the insular or central government the executive officers are appointed, the Philippine Commission consisting of nine members being appointed by the President. Four of the members are the heads of executive departments of the Government and five are members of the Commission in its legislative capacity. This body is the upper house of the Legislature. Formerly five members of this body were Americans and four Filipinos. For several years one of the executive departments—

that of Finance and Justice—has been presided over by a Filipino, while one of the legislative members has been an American.

A Filipino has been the Attorney General of the Islands for several years.

In the legislature the lower house, the Philippine Assembly, is composed of 81 members elected from the Christian and civilized portion of the Archipelago. The jurisdiction of this legislature is far greater than that of the state legislatures.

All acts of the Legislature are reported to Congress, which has never exercised the reserved power and right to annul the same.

APPOINTMENT OF A CIVIL GOVERNOR

In 1901 conditions justified an extension of civil government, and President McKinley issued an order July 4, 1901, transferring from the Military Governor to the President of the Philippine Commission the powers of the executive branch of government in all the pacified provinces of the Islands. Hon. William H. Taft was the first Civil Governor.

SCOPE OF AUTHORITY GRANTED THE PHILIPPINE ISLANDS

The government of the Philippine Islands was authorized by Congress to exercise certain powers of sovereignty which theretofore in our history has been exercised by the Federal Government exclusively. Rights and privileges were conferred upon the Philippines which never before had been given to any political entity subordinate to Congress. Congress also conveyed to the insular government the administration of all the public property in the archipelago which had passed from the Crown of Spain to the United States, except such land or other property as shall be designated by the President of the United States for military and other reservations of the Government of the United States.

No other portion of the territory subject to the sovereignty

of the United States is to-day exercising by and for itself so many of the powers of sovereignty as is the Philippine Archipelago. No other portion of the territory of the United States maintains at its own expense its own agencies for the performance of many functions performed elsewhere at federal expense, such as light-house service, separate postal, customs, and internal revenue services. No official of the government of the Philippines, not even a judge, receives his salary from the United States Treasury, with the single exception of the two Filipino Commissioners at Washington.

CENTRAL GOVERNMENT

Outline of the Present Organization

The present Governor General is the Hon. Francis Burton Harrison of New York, who is assisted by the secretaries of the four executive departments:

Secretary of the Interior, Winfred T. Denison, New York.

Secretary of Commerce and Police, Eugene E. Reed, New Hampshire.

Secretary of Finance and Justice, Victorino Mapa, P. I.

Secretary of Public Instruction, Henderson S. Martin, Kansas.

The city of Manila is organized separately under a board which reports to the Governor General.

Resident Commissioners

The two resident commissioners to the United States, elected for terms of four years, and entitled to a seat but not a vote in the House of Representatives, are Manuel L. Quezon and Manuel Earnshaw.

Judiciary

The judiciary embraces the Supreme Court, three of the seven members being Filipinos; the courts of first instance and the

justices of the peace courts. There are 26 districts and 36 judges of first instance, 22 of these being Filipinos.

Both the organized municipalities and the newer settlements and townships have their justices of the peace appointed by the Governor General from nominations made by the judges of first instance of the district.

Administrative Coöperation

Owing to the diversity of tribes and languages, as well as to the varying degree of development among those even in neighboring communities, it was impossible to depend upon the initiative of the people of the municipalities and provinces to make as rapid advancement in education, in sanitation, and in many other forms of public service as was demanded by their condition. It consequently was essential to associate with the fullest local liberty the hearty coöperation of the various agencies of the central government. The general lack of taxable wealth made it necessary to reinforce the local revenue by some form of aid from the central government.

This coöperation has brought marked advances. The local schools are under the supervision of insular teachers, the sanitary work is inspected and directed by experts, and there is combined effort under competent technical supervision as to public works.

The government of the city of Manila is vested in a municipal board which administers an area of 14,905 square miles, with a population of some 267,000 people.

Under the American government there have been added 41 miles of streets and 28 bridges; bituminous, macadam, and wood block paving have been placed on the principal streets. The area of streets sprinkled daily is 1,142,400 square yards, and nearly double that area of street surface is cleaned daily. The area of city parks and public grounds cared for has doubled since 1905, being about 300 acres, and preliminary work is being done on some 600 additional acres. Eight public markets yield the city an annual revenue of some $150,000.

The police force consists of 682 men, a reduction of 259 from the maximum strength in 1902.

The improvement of the port and water front has been of marked aid to commerce, while the installation of adequate water and sewer systems, new street car line, etc., has made the city much more modern and attractive as a place of residence, while there has also been a marked improvement in the health of the inhabitants.

MANILA WATER SUPPLY AND SEWERAGE SYSTEM

The installation of a water system was originally begun in 1878 and completed in 1882. Before the introduction of this system the water supply of the entire city was derived from shallow wells and the Pasig River.

Upon American occupation the supply was found to be insufficient, badly contaminated, and a constant menace to the public health, while there was practically no sewerage system. Plans, surveys, and complete study of a new water system were finished in the fiscal year 1903, and a year later those for a sewerage system for a population of about 440,000. Under the organic law the Philippine Commission authorized a bond issue of $4,000,000 to cover the installation of the two systems. The new water system was practically completed in 1908. These improvements were followed by a remarkable betterment in health conditions.

The Department of the Interior

This department includes the bureaus of health, science, lands, forestry, and weather. In addition, the Secretary of the Interior has general supervision of the work among the non-Christian tribes.

The Bureau of Health

This bureau, founded by medical officers of the United States Army, is the medical department of the insular government,

its services being available to and extensively used in the provinces and municipalities. It has charge of the collection of vital statistics and the protection of the public from dangerous communicable diseases by practical educational methods, the administration of public charities, care of the insane, of orphans, aged, the supervision of factory conditions, and the hygienic and medical care of all government employees. The fullest possible efforts have been made to bring the daily benefits of modern sanitation within reach of all willing to receive them. The results attained are immeasurable and place the sanitary and health work in the Philippines, with similar work in Cuba and Panama, at the head of American accomplishments.

Outside of a few principal cities there was practically nothing known in the Philippines of hospitals or physicians.

In addition to the ordinary impediments to sanitary progress, due to the conditions following the war and insurrection, there was to be overcome a conservatism of backward peoples opposing in their ignorance and superstition every effort toward modern sanitation.

Smallpox and Vaccination

In the first two months that Americans had charge of the work of sanitation more people were vaccinated in Manila than in the preceding ten years. In 1907 the director of health reported that in seven provinces where theretofore there had been approximately 6,000 deaths annually from smallpox, not a single death from this disease had been reported during the year. More than 2,000,000 vaccinations were performed in a single year. A total of over 10,000,000 has been reached and the annual mortality from smallpox, which prior to American occupation averaged 40,000 cases a year, has been reduced to a few hundred.

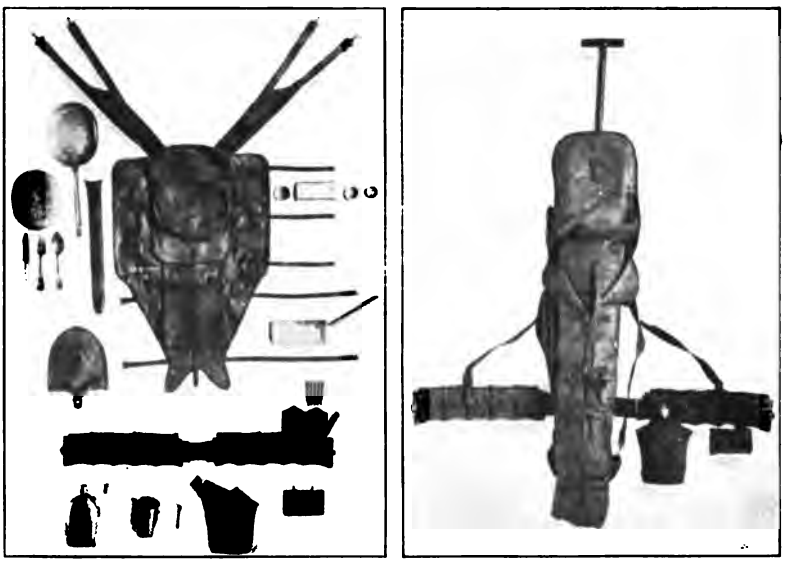
Field company Signal Corps on the march

Semaphoring

Wigwagging

Signal Corps Class in telegraphy

Infantryman in heavy marching order



The new Infantry equipment in detail

It comprises a collapsible frying pan, plate, knife, fork, spoon, water bottle, first-aid kit, cup, emergency rations, intrenching tool, bayonet, half a tent, blankets, and ninety cartridges

Bubonic Plague

Manila was one of the worst plague spots in the East, and the average rate of mortality among the natives and the foreign residents was appalling.

Since 1903 the bureau of health has been striving to eradicate plague through the isolation of all persons suffering from the disease and the destruction of plague-infected rats.

The campaign against the disease is conducted on the theory of the Indian Plague Commission that bubonic plague comes from the plague-infected rats by means of rat fleas, and the measures of protection are directed chiefly against the rat.

Hospitals

The most modern hospital in the Orient was opened in Manila during the visit of the Secretary of War in 1910. This is the Philippine General Hospital, with a training school for Filipino nurses and a clinical hospital for the Philippine Medical School. The beneficent work for the poor is already exerting a far-reaching influence in convincing the people that a hospital is a place in which to get well rather than one in which to die.

Bureau of Forestry

The bureau of forestry administers the forests on public lands.

The virgin forests are estimated to contain about 2,400,000,000 board feet, while the present commercial use, other than firewood, is estimated at less than a hundred million feet a year.

The forests contain over 600 varieties of hardwoods, many of them suitable for the choicest cabinetwork.

A forestry school is maintained in connection with the University of the Philippines.

The Constabulary

The Philippine Constabulary is the armed police force of the government of the Philippine Islands, and consists of 325 officers and 4,000 men.

A Common Language

At least 3,000,000 children have had instruction in English. For many years English has been the official language in all branches of the government except the courts. The business of the government, however, has been very largely conducted in Spanish and in the various dialects. The aim, of course, is not to impose a burden upon any, but rather to encourage the use of English.

Public School System

Upon return of his regiment from the Philippines in 1901 the author remained, being detailed by the Governor General as the first Division Superintendent of Schools under the Civil Government. It was his privilege and pleasure to appoint the first school boards and corps of Filipino teachers in many towns and to assist the General Superintendent of Public Instruction, Dr. Fred W. Atkinson, pending the arrival of Division Superintendents appointed in the United States.

This was a most fascinating experience and created keen interest in the ultimate results of American influence, assistance, and protection extended to the Philippines and the Filipino people.

All public schools of the Philippines, except those of the Moro Province, are under the bureau of education. There are about 539 American teachers, 1,291 Insular Filipino teachers, and about 8,014 Filipino municipal teachers employed in the service.

The work includes the organization and conduct of:

1. Primary schools, which offer a four-year course, providing instruction in English, simple arithmetic, geography, and at least the rudiments of some useful occupation.

2. Intermediate schools, which give three years' additional

instruction, and which throughout the course lay great emphasis upon vocational training, including a general course, a course as a preparation for teaching primary grades, a course in farming, a course in housekeeping and household arts, a trade course, and a course for business.

3. High schools, offering a regular secondary course of four years, modified in outline in certain special schools to conform to the aims of such institutions as the Philippine Normal School, the Philippine School of Commerce, and the Philippine School of Arts and Trades.

All instruction is given in the English language.

The Bureau of Education is devoting itself to the problem of formulating and putting into operation a program of industrial instruction which will be at once logical in its sequence from grade to grade and in close harmony with the industrial needs of the community and which will prepare boys and girls in a practical way for industrial, commercial, and domestic activities.

Nineteen trade schools are maintained in various provinces; manual-training classes are conducted in all provincial schools, and in practically all intermediate and primary schools. These schools manufactured during the school year products to the value of $196,548.27. There are over 3,000 school gardens and nearly 25,000 home gardens supervised by school authorities. Five school farms are operated.

The University of the Philippines

The University of the Philippines was founded in 1904 to provide advanced instruction in literature, philosophy, science, and arts, and to give professional and technical training.

Bureau of Printing

The bureau of printing furnishes all printing and binding for the government of the Philippine Islands.

In 1907 the management and control of the insular ice plant

was turned over to the bureau of supplies. This plant cost the Government over $1,000,000, and was built originally to supply the army of occupation. It now furnishes ice, distilled water and cold storage for the Army, the Navy, and the insular government, as well as the general public.

PORTO RICO

Under the terms of the Treaty of Paris, ratified April 11, 1899, Spain relinquished jurisdiction and ownership over the Island of Porto Rico and it became a possession of the United States. Civil government was established May 1, 1900, under the Act of Congress approved April 12, 1900.

The executive power is vested in a Governor, appointed by the President of the United States, who has practically the same duties as the governors of other territories of the United States. The present Governor is Hon. Arthur Yager, of Kentucky.

The legislative power is vested in the Legislative Assembly, consisting of the Executive Council and the House of Delegates, corresponding respectively to a senate and a house of representatives.

The Executive Council consists of 11 members appointed by the President for a term of four years, at least five of whom must be native inhabitants of Porto Rico. Seven of the members of the Executive Council are also the heads of the seven executive departments created by Congress.

The House of Delegates has 35 members, all of them elected every two years by the voters of the Island, each of the 7 electoral districts into which the Island is divided being entitled to 5 representatives.

The Island is represented in the Congress of the United States by a resident Commissioner—Luis Munoz Rivera.

The judiciary consists of a Supreme Court composed of 5 judges appointed by the President; 7 district courts, the judges of which are appointed by the Governor for a term of four years; 34 municipal courts, the judges of which are elected by the

people for a term of four years, and 57 justices of the peace courts, appointed by the Governor. There is also a United States District Court.

Porto Rico lies within the Tropics in the Caribbean Sea, 450 miles east of Cuba, 75 miles east of San Domingo, and 1,500 miles from New York. Its area is approximately 3,600 square miles and its population 1,120,000.

Porto Rico is a very prosperous, healthy commonwealth of unrivalled natural resources.

Under American control the commerce and public roads of Porto Rico have more than quadrupled, the value of real estate has more than trebled, and the health of the inhabitants has very greatly improved. There is now expended on an average $2,000,000 annually in the cause of public education as against $35,000 before the transfer to the United States.

An irrigation system has been constructed at a cost to date of $5,138,991 which has brought an area of approximately 30,413 acres under cultivation.

An organization of native troops, "The Porto Rico Regiment United States Infantry," under the command of an officer of the United States Army, forms a part of our Regular Army and is maintained by the United States Government at Henry Barracks for the general protection of the Island.

In October, 1898, 165 miles of public roads had been constructed at a cost of $2,560,927. On June 30, 1915, there had been constructed since American occupation 525 miles at a cost of $4,089,680.

At the time of American occupation there were 528 schools in the Island with an enrollment of about 22,000 children. Not one building especially constructed for school purposes was to be found in the Island. The schools were free only for poor children. Others were obliged to pay a monthly fee to the teacher.

From a population of approximately 419,282 of school age—between five and eighteen years—there were enrolled during the last year 168,319 pupils.

There are now 449 school buildings owned by school boards, and 1,045 rented, making a total of 1,494 school buildings in use, with 3,934 school rooms and 2,461 teachers. Since American occupation the death rate has decreased nearly fifty per cent. During the year 1901 it was 40.86 per thousand and in 1915 it was 19.78 per thousand.

Some 400,000 persons or nearly 40 per cent. of the entire population were afflicted with hookworm, a cure for which has been discovered.

By proclamation of the President dated July 25, 1901, free trade was proclaimed between the United States and Porto Rico and a very remarkable increase has been made in the commerce of Porto Rico since that time.

The imports from the United States into Porto Rico have steadily increased from $6,965,408, in 1901, to $30,929,831 in 1915. The imports into Porto Rico from foreign countries increased from about $1,952,728, in 1901, to about $2,954,465 in 1915.

The exports to the United States from Porto Rico were $5,581,288, in 1901, to $42,311,920 in 1915. The exports from Porto Rico to foreign countries increased from $3,002,679, in 1901, to $7,044,987 in 1915. The total commerce of the Island has increased more than fourfold, from $17,502,103, in 1901, to $83,241,203 in 1915.

The balance of trade against Porto Rico in 1901 was $334,169.

The balance of trade in favor of Porto Rico in 1915 was $15,472,611.

American goods constitute ninety per cent. of the imports and America receives eighty-five per cent. of the exports.

The enormous growth of the industries in Porto Rico under American protectorate, 1901 to 1915, is shown by the following table:

	1901	1915	Per cent. increase
Sugar	$4,715,611	$27,278,754	578
Tobacco	684,391	9,246,543	1,365
Coffee	1,678,765	7,082,791	421
Fruit	109,801	3,441,157	3,133

CHAPTER XIV

INFANTRY

INFANTRY, the foot soldiers of an army, constitutes its main fighting element. To-day, as in the past, the backbone of an army and the basis of its military organization is its infantry or the number of rifles in the infantry regiment. The cavalry and artillery strength, as to horses and cannon, are a definite ratio of the infantry strength.

The infantry arm of service, under the National Defense Act of June 3, 1916, will be increased from thirty regiments to sixty-five regiments, including the Porto Rican Regiment, which is commanded by a Lieutenant-Colonel of the United States Infantry. This increase will be in five annual increments, commencing July 1, 1916, and ending July 1, 1920, unless the President exercises his right to call for the remaining increments at earlier dates by reason of war or national emergency. This act provides an infantry peace strength of approximately 3,769 officers, including the four surgeons and two veterinarians to each regiment, and 87,620 enlisted men, and an increase to 127,985 enlisted men during war.

Upon the infantry devolves the burden of every campaign or battle. The infantry must stand the brunt of the attack. The proper training of our infantry, therefore, is a primary function of the War Department.

Modern warfare requires but one kind of infantry—good infantry. Good infantry can defeat an enemy greatly superior in numbers but lacking in training, discipline, leadership, and

STRENGTH AND ORGANIZATION OF INFANTRY UNITS

REGIMENT (65)

1 Colonel (64)*
1 Lieut.-Col. (65)
4 Medical Officers
1 Chaplain (65)

HEADQUARTERS COMPANY (65)

1	Capt. mtd., (Reg. Ajdt.)
1	Reg. Sgt. Major, mtd.
3	Bn. Sgt. Maj., mtd.
1	First Sergeant, (Drum Major)
2	Color Sergeants
1	Mess Sergeant
1	Supply Sergeant
1	Stable Sergeant
1	Sergeant
2	Cooks
1	Horseshoer
1	Band Leader
1	Assistant Band Leader
1	Sergeant, Bugler
2	Band Sergeants
4	Band Corporals
2	Musicians, first-class
4	Musicians, second-class
23	Musicians, third-class
4	Privates, first-class, mtd.
12	Privates, mounted
59	

MACHINE-GUN COMPANY (65)

1	Captain, mounted
1	First Lieutenant, mtd.
2	Second Lieutenants, mtd.
1	First Sergeant, mtd
1	Mess Sergeant
1	Supply Sergeant, mtd.
1	Stable Sergeant, mtd.
1	Horseshoer
5	Sergeants, (+2)
6	Corporals (+2)
2	Cooks
2	Buglers
1	Mechanic (+1)
8	Privates, First-class (+4)
24	Privates, (+12)
57	(+21)

SUPPLY COMPANY (65)

1	Captain, mtd.
1	Second Lieut. mtd.
3	Reg. Sup. Sgts., mtd.
1	First Sgt., mtd.
1	Mess Sergeant
1	Stable Sergeant
1	Corporal, mtd.
1	Cook
1	Saddler
1	Horseshoer
27	Wagoners, one for each authorized wagon of the Field and Combat train
39	

BATTALIONS, of 4 Companies each, (195); one Major and one 1st Lieutenant, Battalion Adjutant.

1st Bn.	2nd Bn.	3rd Bn.
A	E	I
B	F	K
C	G	L
D	H	M

414 + 414 + 414 = 1242

EACH COMPANY

1	Captain
1	First Lieutenant
1	Second Lieutenant
1	First Sergeant
1	Mess Sergeant
1	Supply Sergeant
6	Sergeants (+2)
11	Corporals (+6)
2	Cooks (+1)
2	Buglers
1	Mechanic (+1)
19	Privates First-class, (+9)
56	Privates (+31)
103	(+50)

*The Colonel of the Porto Rican Regiment of Infantry is detailed from officers of Infantry not below the grade of Lieutenant-Colonel.

War strength is indicated by + with numeral thus (+5).

Infantry Bugler in heavy marching equipment and with empty water bag on top. This bag holds 20 gallons of drinking water which is sterilized by sterilizing compound

Officers cross-country riding

How old is Dobbins?

A veterinarian searching for the reason "why"

Negotiating a 90° hill

Scenes at the Mounted Service School for Officers, Fort Riley, Kansas

morale. Infantry service is not less technical now than the cavalry service. It is not so technical as the artillery service, but the nature of its services is such on the battlefield that it requires more intensive and longer continued training and disciplinary measures to make it efficient in carrying out its military functions.

The infantryman must walk, carry his pack, rifle, ammunition and rations, aggregating about forty-five pounds. In reconnaissance work he is thrown very much upon his own resources, and often works independently. While it is desirable to develop that individuality which makes for efficiency in scouting and reconnaissance work, which often falls to the lot of the soldier, the fact remains that in all modern training, and especially in the infantry, team-work is essential. Without team-work success is impossible. This is more true to-day than ever before on account of the advance of modern weapons, instruments and methods of warfare.

There is a vast difference between mere mechanical drill and precision on the parade ground in times of peace, and which is readily acquired, than in the stealthful advance under cover to attack the enemy in his entrenched position.

The daily routine of the American soldier is rather strenuous, yet there is ample time for study and recreation. The physical work and the peculiar training renders one less susceptible to certain diseases, particularly tuberculosis so common in some of our factory districts. The real benefits of military training to the soldier and the community in which he lives are: first, an increased capacity to produce (higher personal efficiency); second, a respect for constituted authority; third, immunity from disease; fourth, reduction in crime.

Infantry is the basis of military organization, as indicated in table on page 126.

The Company has administrative powers over its men, and constitutes the smallest unit for messing, quartering, supplying equipment, etc.

The Regiment is the smallest administrative and tactical unit.

men to the firm control of their leaders. Extended-order drill is executed at "ease." The Company is the largest unit which executes extended-order drill.

(c) Field exercises are for instruction in the duties incident to campaign. Assumed situations are employed. Each exercise should conclude with a discussion, on the ground, of the exercise and principles involved.

(d) The combat exercise, a form of field exercise, of the Company, Battalion, and larger units, consists of the application of tactical principles to assumed situations, employing in the execution of the appropriate formations and movements of close and extended order.

Combat exercise must simulate, as far as possible, the battle conditions assumed. In order to familiarize both officers and men with such conditions, companies and battalions are frequently consolidated to provide war-strength organizations, the quota of officers not participating being assigned as observers or umpires.

Since the firing line can rarely be controlled by the voice alone various forms of visual signalling are used.

The infantry must have the tenacity to hold every advantage gained; the individual and collective discipline and skill needed to master the enemy's fire; the determination to close with the enemy in attack, and to meet him with the bayonet in defense. Infantry must be trained to bear the heaviest burdens and losses, both of combat and march.

Modern combat demands the *highest order of training, discipline, leadership,* and *morale* on the part of the infantry.

The art of leadership consists of applying sound tactical principles to concrete cases on the battlefield.

Self-reliance, initiative, aggressiveness, and a conception of team-work are the fundamental characteristics of successful leadership.

A correct grasp of the situation and a definite plan of action form the soundest basis for a successful combat.

Cavalry Troop, New York Military Academy, Cornwall-on-Hudson

Cavalry drill on the Mexican border

Superior equitation

A good plan once adopted and put into execution should not be abandoned unless it becomes clear that it cannot succeed.

Officers must act in accordance with the spirit of their orders and must require of their troops the strictest discipline on the field of battle.

The best results are obtained when leaders know the capacity and traits of those whom they command; hence, in making detachments, units should not be broken up, and a deployment that would cause an intermingling of the larger units in the firing line should be avoided.

In order to lighten the severe physical strain inseparable from infantry service in campaign, constant efforts must be made to spare the troops unnecessary hardship and fatigue; but when necessity arises, the limit of endurance must be exacted.

The complete equipment of the soldier is carried into action unless the weather or the physical condition of the men renders such measure a severe hardship. This complete equipment affords men lying prone considerable protection against shrapnel.

AUTOMOBILE INFANTRY UNITS

Although infantry has been transported in large numbers by automobile and motor trucks during the present war in Europe no such transport of United States Army Infantry units has yet been planned. It is the practice in Europe to group such transportation along the line of communication or near the supply bases for service as conditions warrant. Occasionally they are used to transport troops, but their normal employment is for the transport of supplies. The French are now using large numbers of these having pneumatic tires and wide wagon beds similar to those employed by express companies in our country. These are capable of carrying twenty to twenty-five equipped infantrymen at an average rate of at least fifteen miles per hour. The employment of motor transportation in our divisional trains is under consideration. The entire substitu-

tion of motor transport for animal-drawn vehicles in divisions is not yet considered advisable. A partial substitution may be made.

We are now using with our organizations along the Southern border hundreds of motor trucks for carrying supplies, and between one and two hundred motorcycles for messenger purposes. One provisional company of motorcyclists was organized in the Fifth Brigade by General Bell for tactical use. This company gave very good service in patrolling and reconnaissance work. The recent National Defence Act did not provide for infantry motorcycle organizations. Undoubtedly they should often be used for messenger purposes.

It is planned to replace a certain number of riding animals by automobiles. The commanding generals and staff officers will be able to perform their duties more efficiently when so provided than when on horseback.

The whole question is one that is in a formative stage in our service, but is developing rapidly due to the employment of a great deal of motor transportation along the Southern border.

NEW ARMY FIELD COOKERY

The Punitive Expedition in Mexico has tried out a type of wheeled kitchen which marks an epoch in Army field cookery. This kitchen, mounted on two wheels and weighing complete about 2,100 pounds, has been recommended for adoption by Generals Funston and Pershing, and numerous Army officers. It has a normal capacity of seventy-five gallons, or 800 pounds, of cooked food, with storage capacity for fifty to seventy-five loaves of fresh bread, sufficient food for three meals for a war-strength company of one hundred and fifty men.

This kitchen has been developed along the lines of similar kitchens used in the present European War. It can be drawn by a team of horses or mules, or can be attached to a motor truck as a trailer or be provided with its own motor power.

It cooks as it travels along, thus minimizing the camp-kitchen bugbear of Army field service and maximizing military efficiency.

Brigadier General John F. Morrison, U. S. Army, in the introduction to his recent book, "Training Infantry," thus epitomizes the importance of infantry training:

"There is nothing more important to an army than the correct training of its infantry. The training of all the arms has much in common, but training infantry, owing to the manner of its use in battle, calls for much that is not required in the other arms.

"The infantry soldier must work more independently than men in the other branches. He cannot be led or controlled as can men in groups or close formations; hence, he needs to be more thoroughly instructed in the part he is to play. This instruction cannot be given him on the field of battle. The man who must steadily advance on an enemy in position requires not only higher training but higher discipline than one who does his fighting in close formation, or at long range and out of sight of the enemy and protected from hostile fire by steel shields.

"It is reported as an incident in the recent Balkan War that a General of Division, whose infantry had been reinforced by the addition of fifty per cent. of recruits who had only received about a month's training, prepared for battle by sending all his new men to the rear, preferring to fight without them. His division was successful, but the other divisions, which retained their new men in ranks during combat, broke and were routed.

"War of to-day is not a game for amateurs. Infantry to be of any value has not only to be trained but to be properly and thoroughly trained. On the part of those in charge of this training there is necessary an appreciative understanding of the objects sought, earnest effort, tact, enthusiasm, and a real knowledge of men."

CHAPTER XV

THE CAVALRY

THE Cavalry branch of our Army, consisting of 15 regiments, will be increased by five annual increments, June 30, 1916, to July 1, 1920, to 25 regiments each with a total authorized peace strength of 59 officers, including surgeons and veterinarians, and 1,011 enlisted men, and 1,487 enlisted men at war strength, organized as indicated in the diagram on page 133.

At present about ninety-five per cent. of our Cavalry is in active or semi-active service along the Mexican border, in Hawaii, the Philippine Islands, and Canal Zone.

The Cavalry is the eyes and ears of an army in the field. It searches out the enemy and secures information relative to its strength, disposition, and movements. The Artillery then prepares the way for victory by long-range firing with shrapnel and shell while the Infantry advances for the main attack. The battle over, the Cavalry rushes forward to collect the fruits of victory and to turn the enemy's retreat into a rout and destroy it. If, however, the Cavalry is inadequate or exhausted and can move no faster than the Infantry, the defeat of the enemy is but temporary and becomes a dignified, tactful retirement to new positions. The whole process must then be again attempted with additional losses.

The shortage of German cavalry in the European War, 1915, on the eastern front, made possible the masterly retreat of the Russian Army from one position to another and prevented its annihilation. Cavalry service, therefore, merits the profound consideration in determining the strength of a field army, and

PEACE ORGANIZATION CAVALRY UNITS AND PAY OF ENLISTED MEN

1 REGIMENT (25)

1 Colonel (25)
1 Lieutenant Colonel (25)
1 Chaplain (25)
4 Medical Officers (100)
2 Veterinarians (50)

HEADQUARTERS TROOP (25)

1 Capt. Reg. Adj. (25)	
1 Reg. Sgt. Major (25)	$45.00
3 Squad. Sgts. Maj. (75)	45.00
1 1st. Sgt. Drum Maj. (25)	45.00
2 Color Sergeants (50)	36.00
1 Mess Sergeant (25)	36.00
1 Supply Sergeant (25)	36.00
1 Stable Sergeant (25)	36.00
1 Sergeant (+2) (25)	36.00
0 Corporals (+5) (+125)	24.00
2 Cooks (50)	30.00
1 Horseshoer (+1) (25)	30.00
1 Saddler (25)	21.00
2 Priv. 1st Class (+5) (50)	18.00
9 Privates (+18) (225)	15.00
1 Band Leader (25)	75.00
1 Asst. Band Leader (25)	40.00
1 Sergeant Bugler (25)	40.00
2 Band Sergeants (50)	36.00
4 Band Corporals (100)	30.00
2 Musicians 1st Class (50)	36.00
4 Mus. 2nd Class (100)	30.00
13 Mus. 3rd Class (425)	24.00
55 (+31)	

MACHINE-GUN TROOP, (25)

1 Captain (25)	
1 First Lieutenant (25)	
2 2nd Lieutenants (50)	
1 First Sgt. (25)	$45.00
1 Mess Sgt. (25)	36.00
1 Supply Sgt. (25)	36.00
1 Stable Sgt. (25)	36.00
2 Horseshoers (50)	30.00
5 Sergeants (+3) (125)	36.00
6 Corporals (+2) (150)	24.00
2 Cooks (50)	30.00
1 Mechanic (+1) (25)	21.00
1 Saddler (25)	15.00
2 Buglers (50)	15.00
12 Priv. 1st C. (+1) (300)	18.00
35 Privates (+14) (875)	15.00
74 (+21)	

SUPPLY TROOP, (25)

1 Capt. Reg. Sup. Offi. (25)	
2 2nd Lieutenants (50)	
3 Reg. Supply Sgts. (75)	$45.00
1 First Sgt. (25)	45.00
1 Mess Sgt. (25)	36.00
1 Stable Sgt. (25)	
1 Corp. (+1) (25)	
1 Cook (+1) (25)	
1 Horseshoer (+1) (25)	
1 Saddler (+1) (25)	
37 Wagoners (925) one for each authorized wagon of the Field and Combat train.	$21.00
50 (+4)	

SQUADRON. (75) 3 TO REGIMENT

1 Major
1 1st. Lieut. Squ. Adjt.

1st Sqd. Troop	2nd Sqd. Troop	3rd. Sqd. Troop
A	E	I
B	F	K
C	G	L
D	H	M

294 + 294 + 294 = 882

EACH TROOP

1 Captain (12)	
1 1st. Lieut. (12)	
1 1st. Sgt (12)	$45.00
1 Mess Sgt. (12)	36.00
1 Supply Sgt. (12)	36.00
1 Stable Sgt. (12)	36.00
5 Sgts. (60)	36.00
8 Corps. (96)	24.00
2 Cooks (24)	30.00
2 Horseshoers (24)	30.00
1 Saddler (12)	21.00
2 Buglers (24)	15.00
10 Prvts. 1st Class (+10) (100)	18.00
36 Prvts. (+25) (432)	15.00
73 (+35)	

(The war strength is indicated by + with number added, thus: (+5).

Peace Strength: . . . . . 1070. Officers and enlisted men.
War Strength . . . . . 1546 " " " "

calls for a masterful, scientific and practical knowledge of the horse, his potentialities and limitations.

Prior to hostilities the securing of military information devolves upon the General Staff. This includes the geography, resources and military strength of the various nations to enable the War Department to decide upon the size of an army or expedition, the proportion of the different arms, character of the clothing, equipment, etc., that may be necessary in time of war.

After the outbreak of hostilities it is a primary function of the Cavalry to secure military information in the theatre of operations. This service can now be materially augmented by air craft. A commander to properly estimate the military situation arising, must be constantly supplied with reliable information as to the position, strength and intention of the enemy. "Reconnaissance" is the military term used to designate this kind of military work and is usually made by cavalry. Cavalry not only secures information but screens the main army by keeping the enemy at a distance. Occasionally a brigade or division of cavalry may be required to push boldly ahead one or two marches, find the main body of the enemy, and preserve contact with it until the main armies arrive. Commanders of independent cavalry must solve the difficult problems confronting them without expecting aid from other troops. A brigade of cavalry on reconnaisance duty covers about ten miles of front.

The Cavalry has the advantage of mobility and shock action afforded by their mounts. The cavalryman's first weapon is his gallant steed trained to respond to his slightest impulse. Next comes his long range rifle, then the automatic .45-caliber pistol, and finally his sabre. He and his mount are indeed a composite fighting unit, a great military asset. The United States cavalryman, with his up-to-date equipment, his automatic pistol, his old reliable magazine rifle, and his young, sound, and sturdy mount, is second to no cavalryman in the world.

The ultimate and supreme test of cavalry efficiency is then a question of having each regimental squadron and troop com-

mander so train each cavalryman as to automatically obey his will and command when in action. Cavalry leadership combines all the essentials of generalship, confidence, seasoned judgment, resourcefulness, indomitable courage and zeal, boldness in decision to strike quickly, clearness of plan of action, and orders to subordinates, firmness of will, inspiration, and *esprit* to succeed, and last, but not least, loyalty.

The cavalry commander must be able to maneuver at fast trot, to grasp opportunity quickly, and to deliver telling blows calculated to shock and demoralize the enemy, and insure victory for his own command. Poor cavalry is worse than none at all.

Major Lincoln C. Andrews, United States Cavalry, in his book "Fundamentals of Military Training," sums up cavalry action thus:

"There is no normal attack formation. In general, about two-thirds of the force is put into the *attacking line* and one-third in *the reserve*. The attacking line charges with only the force deemed necessary, the other troops following closely in support, lending moral support to the charge and charging as opportunities develop. All troops rally immediately after the charge and return to the fight. That side wins in the end which has the last formed troops in hand for charging; hence the importance of each unit quickly rallying and getting back with the fight.

"The infantry works en masse, the artilleryman always under direction of his officers, thus constituting the bone and sinew of its mass and strength. The cavalry patrols are the *fingers* reaching out, brushing aside, feeling for a good hold in the struggle to come, flashing back information along the nerve channels to the controlling unit. They work in small groups, often as individual scouts, perhaps a day's march away from their officers, alone with their military consciences. None but God will know whether they have done their best; whether they have dared enough to accomplish their mission; whether when opportunity offered for them to gain information they had the cool

courage and resourcefulness to go in and get it or quietly skulked in safety and let the opportunity pass.

"*The discipline of cavalry* must develop such *esprit* as will insure the individual's giving his uttermost, be he lone private, scouting, or non-commissioned officer leading his patrol. That Colonel who trains his officers and men all to look to him for decision in all matters must expect disappointment when his troop meets actual conditions in campaign, for he will then not be present to control every situation; and his men, if unused to responsibility, will not act quickly and surely—even worse, often will not act at all.

"The troop made up of well-trained squad teams is the fighting machine. The Colonel of the regiment wants 12 troops thus trained to his standard of efficiency, and three Majors able to fight them to the fullest advantage. The troop commanders must know the principles and mechanisms of these squadron maneuvers not alone to handle their troops intelligently but to be able to take command of the squadron when occasion demands.

"The fast mounted squadron drill in close order gives the mechanism and training for maneuvering in the presence of the enemy preparatory to delivering the charge in mounted combat. All cavalry drill must be characterized by *elasticity*, whether mounted or dismounted."

In dismounted action every fourth man becomes a horse holder to hold his own horse and those of three troopers in a sheltered place (if possible), while the troopers advance as infantry (leaving their sabres on their mounts). Later this man takes the horses to any point designated. This important rôle of cavalry was developed in our Civil War. It is not in general use in foreign cavalry service and may account in a measure for the failure of foreign cavalry to overtake and get behind and defeat or at least hold in check retreating columns of infantry.

The value of the cavalry raid for quick, arduous, and daring work of vital import to the main object and command has been

exemplified many times by the present Punitive Expedition in Mexico. Probably the most noteworthy instance is that of Colonel Dodd's forced all-night march of seventeen hours covering fifty-five miles of mountainous territory, by which he overtook, surprised, and defeated a much larger force of blood-thirsty Villa Mexican bandits who, the day previous, murdered a Mexican garrison.

During the past two years I have been privileged to attend part of two seasons of equitation at the Army Service Schools, Fort Leavenworth, Kansas, and to visit the Mounted Service School at Fort Riley, Kansas. One who has habitually handled horses in the ordinary way soon realizes that equitation is to modern cavalry service what scientific farming is to ordinary farming. Through the courtesy of Captain Robert Vans Agnew, veterinarian United States Army, and lecturer on equitation Army Service Schools, I give herewith, in part, remarks of general interest from one of his lectures:

"Equitation, as applied by cavalry forces, is a most vital feature of military operations. From time immemorial the cavalry horse has been a great military necessity and asset. But the cavalry horse has no patriotism. A soldier in battle will fight on hour after hour without food or drink, but a horse must have his oats.

"Cavalry service is arduous, yet it is fascinating and absorbing. Once a cavalryman, always a cavalryman, is a favorite slogan. Very seldom do cavalrymen reënlist in another branch of service unless they become unfitted for cavalry service, or have been promoted to the Post Non-commissioned Staff.

"To each cavalryman is assigned a horse, for the care and training of which he becomes personally responsible under the supervision of his officers. The equipment of a cavalryman weighs as much as that of the Roman horseman of 1,500 years ago, namely, about ninety pounds. This equipment, together with the rider, in time of peace, aggregates 240 to 250 pounds, and in time of war about 280 pounds.

"The first duty and obligation of a cavalryman is toward his mount. Horses are not affectionate, yet the good cavalryman loves his horse and gives it consideration over himself. Only after his horse is properly cared for will he care for himself. He understands his mount is not built to carry weight, but rather to pull a load, whereas, man is built to carry weight, and not to pull a load. A man can lift a weight that will crush a horse. Man's back is vertical, the horse's back, horizontal. This weak spot of the horse must always be borne in mind by the military man on account of the pressure and friction effect of the excessive load a horse must carry under service conditions.

"It is absolutely imperative, therefore, that every officer who has anything to do with the mounted service must know horsemanship in its comprehensive, scientific, and practical form, otherwise, they cannot teach and train those under them to become the best cavalrymen. They must be able to feed, groom, saddle, bridle, make a bed and look after a horse like an expert. They must be able to put on a shoe and tell at a glance whether or not a horse is properly shod. They must be able to recognize the causes of sore backs and shoulders and know exactly what alterations to make in order that a horse may be continued at work without further damage occurring. They must be able to take the remounts in hand, to put them in condition for service; teach them to two-track, shoulder in and out, turn on the forehand and haunches, be suppled and bent until they move with automatic and chronometrical precision. Under service conditions the schooling of a horse should familiarize him with strange sights, sounds, noises, cheering, music, guns, masses of men, dark nights and silence. He must be taught to stand alone or linked to other horses while his rider dismounts and goes forward as an infantryman to strengthen the firing line. He must be able to change leads at the canter and gallop so as to rest a tired leg; he must be taught to walk, trot, canter, or gallop, to jump freely in the open and alone.

"Through the influence exerted by the Mounted Service

Schools, at Fort Riley, Kansas, officers are taking superior equitation very seriously with the intention of imparting it to those under them and this advance toward that Utopian goal 'A Perfect Troop.' Cavalry must be trained in time of peace and not await the exigencies and rigors of war. A horse loves to be in a mass with other horses and hates to be by himself; it takes long training to teach him individuality; years of application are necessary.

"In war time a horse is tested very severely; the strain is excessive; the exposure considerable; the food and water variable in amount and quality; the weight carried is crushing; the roads are questionable; the marches long; the gait rapid and the halts are short. The utmost is required of the horses, and their endurance depends almost entirely upon the training, care, and management exercised. Their strength must be husbanded until the crucial hour comes which necessitates their sacrifice. Here resourcefulness and natural aptitude play a decisive rôle, since many horses must enter a campaign without previous military training. Food must be given whenever possible. On a march a soldier can rest and eat a sandwich in a few minutes, but it takes a horse about five minutes to eat a pound of oats and twenty minutes to eat a pound of hay. Death soon follows the exhaustion of a horse. The resourceful horsemaster is the one who manages to conserve all his feed and gets it into his animals so as to do them the most good and yet move his command far and fast at all times when called upon. Distance and speed under the saddle are most important factors in cavalry service.

"Injuries under the saddle are identical in time of peace or war, but during war they are more severe. Such injuries are due to (a) friction and (b) pressure. The structures affected thereby are skin, muscle, and bone. When friction is applied continually to the skin for a short time the hair is rubbed off and the part becomes damp and wet with serum, indicating that the outer covering or epithelium has been worn away ex-

posing the small lymphatic vessels of the skin. If this friction is continued a deep hole will wear into the skin, exposing the tissues underneath. Pressure acts differently, by depriving the skin of its capillary blood supply. Press your finger against the back of your hand and note the white mark when it is removed. Pressure is capable of killing and cutting through the tissues of the body. If bone cannot resist pressure under the saddle, the skin, muscle, and bone suffer; but so long as there is a layer of muscle under the skin it will take longer for the injury to appear, since the muscles act as a cushion; therefore, the thinner a horse gets the quicker will he suffer a sore back in consequence of the wasting of his muscles.

"If you start on a long march with a fat horse you invariably have to put extra pads under the saddle to take the place of the lost fat and muscle that the horse started with. There is no muscle between the skin and bone about the withers and spine, consequently, continued pressure there takes but a short time to make a serious sore in which both the bone and the skin are affected. No living tissue can withstand continuous pressure even if that pressure is relatively soft and elastic. You can, therefore, readily understand how easily the pressure from a saddle of iron and wood, cinched on tightly, too tightly in most cases, supplemented by the weight of a rider and his pack, can cause serious injury to a horse's back. No matter where the injury occurs, friction or pressure, or both combined, are the exciting causes and are accountable for all of the pathological conditions which occur. This obvious fact should ever be borne in mind by any one who has occasion to saddle or harness a horse.

"A military saddle has to be built strong and heavy in order to carry weight on it and attached to it. Every part of the saddle can produce some injury. Even if no part of it were capable of producing an injury, there would be a proportion of sore backs resulting from continuous pressure. The best cavalryman, therefore, dismounts whenever he stops his horse and thus rests and safeguards his mount.

"The average cavalry horse weighs about a thousand pounds, and can carry effectively about two hundred pounds or one-fifth its own weight."

The above refers to but one important phase of cavalry training and service. The question of forage, the proper time and method of feeding, the condition of the horse's legs, feet, hoofs, and proper shoeing, grooming, and exercise, are other factors concerning each of which volumes have been written.

The American troop horse has a very difficult rôle to play. In the Middle Ages one horse was ridden and another carried the pack. Our officers follow this practice now, so do our cowboys, so did the Boers. Perhaps our Cavalry will have to come to this system. It is expected that about one-quarter of the entire number of horses engaged in a campaign will have to be replaced every three months.

Remount stations are maintained for this purpose. The United States is divided into three remount zones, each zone having a remount depot at which is a purchasing board: Fort Keogh, Montana; Fort Reno, Oklahoma; and Front Royal, Virginia.

An interesting account of how horses fare in war appears in a published report of the Chief Remount Officer with the Canadian troops in France. It states there are approximately 15,000 horses with the Canadian Army Corps in France, and that even in modern warfare each infantry division of 21,000 men requires 6,200 horses. The horses of a division are taken care of by twelve veterinary officers and one mobile veterinary section of twenty-seven men, which attends to the horses in the firing line. There is one Canadian Cavalry field hospital in France composed of 387 men and six officers. It has a capacity of 1,000 cases, and the work which is done there is really remarkable. Horses, which in previous wars and in civilian life would be destroyed, at once are treated so successfully that in due course they become fit for military duty in the firing line. Of 607 horses sent in on one occasion only 12 died; 597 eventu-

ally became fit for reissue, or to be sold for easy duty. The men work under the most trying conditions, often exposed to the fire of rifle and big gun. They are up around the lines all the time gathering wounded horses. Their horsemanship is remarkable. Wounded horses are immediately given first aid. Any horse that can walk is rushed to the mobile section, or field hospital, his wounds are carefully treated, and every care given him.

"During the second battle of Ypres, when the Canadians were pressed to their utmost, at no time was the supply of horses diminished at the firing line. As casualties occurred among battery and transport horses, reinforcements were rushed through the storm of bursting shells to take their places. Although our guns were within 300 yards of the enemy, there never was a wagon or a gun lost in what is known as one of the fiercest engagements that has taken place in this war.

"Horses' wounds heal more rapidly than man's. Cases of horses with ten bullets in them have been known to report complete recovery within a very few weeks. In fact, some wounded horses have been back in the firing line within a week. If a horse cannot walk, however, he is usually considered a hopeless case, and he must be destroyed."

Figures compiled by the United States Department of Agriculture show that about 75,000 horses were exported from the United States during four of the early months of the war. On January 1, 1915, there were 24,000,000 horses in this country. Three times the number exported during these four months would be less than one per cent. of our horse supply. But a small percentage of the animals exported were mares, and they were for the most part mediocre animals. According to the best information obtainable, Russia had 25,000,000 horses before the war, and it is probably the only country that will not be drained of horses after the war. The United States and Russia have fifty per cent. of the world's horses, the total stock being estimated at 100,000,000.

The daily routine of a cavalry troop is strenuous.

In summer, in garrison, the troopers are up at 6 A. M., at which hour grain is fed the horses by stable men. Breakfast at 6:30 is followed by a hasty police of barracks. Drill call is followed by "Boots and saddles," about 7:20 and the troop is off for mounted drill, lasting about two hours. "Stables" follows, lasting forty-five minutes to one hour, depending upon the condition of the horses. Then the horses are watered and led into the stables by the troop where they are again fed by the stable men. In the afternoon horses are allowed to run loose in the corral until about 4:00 P. M., when they are led into the stables by the troop and fed hay and grain.

Retreat roll call at 6:00 P. M. closes the day's routine.

On Saturday mornings inspections, generally mounted, take the place of drills.

In the field troopers stand reveille roll call about 6:00 A. M., with grooming kits and feed bags, then march to the picket line where they feed and groom the horses. After breakfast camp is broken and policed, horses are watered and saddled, and the troop is off for the day's march. Arriving in camp, picket lines are laid, horses unsaddled and tied on the line, camp pitched, horses fed and groomed before dinner. During the afternoon squad leaders inspect the horses and report to the veterinarian any that are sick or have sore backs and to the horseshoer any that need shoeing, who, if possible, have them in good condition for the next day's march. After dinner the troopers, in general, have until 4:00 P. M., as a recreation period. At that time the horses are led or ridden to water and fed. After retreat men not on duty are again on recreation until "taps."

In the winter mounted drills, consisting principally of horse training, are shorter and are usually held in the riding hall. The troop is also instructed in gymnastics, packing, saber exercise, minor tactics, visual signaling, hippology, scouting and patroling, first aid, and dismounted foot drill, with and without arms. The afternoons are devoted to school for non-commis-

sioned officers. The subjects studied are small arms firing manual, cavalry service regulations, manual of interior guard duty, map reading, field service regulations, Army regulations, hippology, field engineering, and equitation.

On Saturdays there is a first-aid drill for the entire squadron in the gymnasium, conducted by a medical officer. During the target season all drills are suspended except horse exercise.

Along with the proof of our character as a nation must go the proof of our power to play the part that legitimately belongs to us. The people of the United States love peace. They respect the rights and covet the friendship of all other nations. They desire neither any additional territory nor any advantage which cannot be peacefully gained by their skill, their industry, or their enterprise; but they insist upon having absolute freedom of national life and policy, and feel that they owe it to themselves and to the rôle of spirited independence which it is their sole ambition to play, that they should render themselves secure against the hazard of interference from any quarter, and should be able to protect their rights upon the seas or in any part of the world. We, therefore, favor the maintenance of an Army fully adequate to the requirements of order, of safety and of the protection of the Nation's rights; the fullest development of modern methods of seacoast defense and the maintenance of an adequate reserve of citizens trained to arms and prepared to safeguard the people and territory of the United States against any danger of hostile action which may unexpectedly arise; and a fixed policy for the continuous development of a Navy worthy to support the great naval traditions of the United States and fully equal to the international tasks which this nation hopes and expects to take a part in performing.—From the Democratic Party Platform.

U. S. Field Artillery on the march

Field Artillery "bracketing the target"

Target practice. Field artillery using observing mast

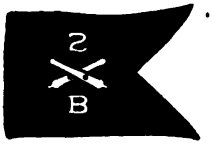
"Fire." Gun at full recoil

Field artillery in position at edge of woods

Gun and caisson "ready"

CHAPTER XVI

THE FIELD ARTILLERY



THE Field Artillery branch of service, consisting of six regiments, will as newly organized consist of 126 gun or howitzer batteries organized into 21 regiments. The increase will be in five annual increments of three regiments each, July 1, 1916 to July 1, 1920. There will be 6 guns or howitzers to each regiment and these may be of the same or different calibers and classes. The Field Artillery includes Mountain Artillery, Light Artillery, Horse Artillery, Heavy (field and siege) Artillery.

In time of threatened or actual hostilities the President is authorized to organize such number of ammunition batteries and battalions, depot batteries and battalions, and such artillery parks, with such number and grades of personnel and such organization as he may deem necessary.

The necessary officers and enlisted men shall be taken from the Officer's Reserve Corps and the Regular Army Reserve. Each regiment of Field Artillery consists of one colonel, one lieutenant colonel, one captain, one headquarters company, one supply company and such number of gun and howitzer battalions as the President may direct. Nothing shall prevent the assembling, in the same regiment, of gun and howitzer battalions of different calibers and classes.

Each headquarters company of a regiment of two battalions consists of one captain, one first lieutenant, one regimental sergeant-major, two battalion sergeants-major, one first ser-

geant, two color sergeants, one mess sergeant, one supply sergeant, one stable sergeant, two sergeants, nine corporals, one horseshoer, one saddler, one mechanic, three buglers, two cooks, five privates (first class), fifteen privates, one band leader, one assistant band leader, one sergeant bugler, two band sergeants, four band corporals, two musicians (first class), four musicians (second class), and thirteen musicians (third class). When a regiment consists of three battalions there is added to the headquarters company one battalion sergeant-major, one sergeant, three corporals, one bugler, one private (first class), and five privates. When no enlisted men of the Quartermaster Corps is attached for such positions, there is added to each mountain artillery headquarters company one packmaster (sergeant, first class), one assistant packmaster (sergeant), and one cargador (corporal).

Each supply company of a regiment of two battalions consists of one captain, one first lieutenant, two regimental supply sergeants, one first sergeant, one mess sergeant, one corporal, one cook, one horseshoer, one saddler, two privates, and one wagoner for each authorized wagon of the field train. When a regiment consists of three battalions, there is added to the supply company one second lieutenant, one regimental supply sergeant, one private, and one wagoner for each additional authorized wagon of the field train.

Each gun or howitzer battery consists of one captain, two first lieutenants, two second lieutenants, one first sergeant, one supply sergeant, one stable sergeant, one mess sergeant, six sergeants, thirteen corporals, one chief mechanic, one saddler, two horseshoers, one mechanic, two buglers, three cooks, twenty-two privates (first class), and seventy-one privates. When no enlisted men of the Quartermaster Corps are attached for such positions there is added to each battery of mountain artillery one packmaster (sergeant, first class), one assistant packmaster (sergeant), and one cargador (corporal).

Each gun or howitzer battalion consists of one major, one

captain, and batteries, as follows: Mountain artillery battalions and light artillery gun or howitzer battalions serving with the field artillery of Infantry divisions contain three batteries; horse artillery battalions and heavy field artillery gun or howitzer battalions contain two batteries. The President may in his discretion increase the headquarters company of a regiment of two battalions by two sergeants, five corporals, one horseshoer, one mechanic, one private (first class), and six privates; the headquarters company of a regiment of three battalions by one sergeant, seven corporals, one horseshoer, one mechanic, two cooks, two privates (first class), and seven privates; the supply company of a regiment of two battalions by one corporal, one cook, one horseshoer, and one saddler; a gun or howitzer battery by three sergeants, seven corporals, one horseshoer, two mechanics, one bugler, thirteen privates (first class), and thirty-seven privates.

In warfare the Field Artillery prepares the way for victory by its firing with shrapnel and shell. Its special qualifications are ability, first, to reach the position of action at the proper time and in effective condition; second, to deliver an effective and overpowering fire upon any designated part of the enemy's position. To meet the first requirement it must be prepared to cover long distances quickly, to overcome all the difficulties and obstacles of the route, and to occupy the position in a skillful manner with men, animals, and material in condition for efficient service. To meet the second requirement it must be prepared to reach any part of the battlefield with an effective and sustained fire and to concentrate its fire upon any desired target.

Mobility, thorough training in fire discipline and fire direction and extensive practice over varied country are essential requisites of these qualifications, the attainment of which is the special object of artillery instruction.

The course of training laid down in drill regulations is designed to develop a settled habit of performing efficiently the ordinary duties pertaining to the service of artillery so that these

functions may be performed naturally and readily in the excitement of action. The regulations also prescribe the principles according to which artillery is to be handled and fought.

Another object of Field Artillery instruction is to develop resourcefulness, initiative, and self-reliance on the part of officers of all grades in applying the principles of the regulations to the special conditions with which they will have to deal in war.

Instruction in garrison is conducted so as to afford thorough practical training of officers and men in the duties which will fall to them in campaign.

Commanding officers of Field Artillery carry out such annual programs of instruction as will prepare artillery officers for the duties of the next higher grade in time of war. Captains are required to exercise command of battalions, lieutenants command of batteries, during a part of each annual course of instruction. Solutions of practical problems involving at first simple tactical situations with appropriate units are required. Officers are trained to think quickly and logically and to assume responsibilities unhesitatingly. They are encouraged to make suggestions based upon their practical experience in regard to methods of instruction as well as different mechanical features of the matériel. The instruction commences with the smallest unit, the section, and proceeds to the larger ones in succession culminating in the annual target practice and field maneuvres by the regiment.

Great precision and attention to detail are essential in order that the soldier may acquire the habit of implicit obedience of orders and of accurate performance of his individual duties as indispensable to efficiency in combined training.

Recruits are assembled in small squads for the beginning of their instruction. As the instruction progresses they are grouped according to proficiency in order that all may advance as rapidly as their abilities permit. This training includes the duties of sentinels, the care of equipments, packing knapsacks, tent pitching, individual cooking, care of the artillery horses,

U. S. Army 3 in. field gun, used against aircraft

U. S. Army 6 in. Howitzer

Coast Artillery Corps Indoor War Game and miniature models of warships

pistol practice, first aid, and the customs and courtesies of the service.

The Field Artillery service regulations have recently been revised so as to embrace the progress in the employment of this arm as derived from the practice at the School of Fire for Field Artillery, at Fort Sill, Oklahoma, and the experience of the Balkan and the European wars.

On account of the destructive effect of artillery projectiles, it is, in general, necessary to post guns so as to conceal them from the enemy, behind hill crests, or trees, and in ravines, or in prepared gun pits. As the cannoneers cannot see the target the gun must be "laid" by especially designed instruments. The direction is given by the panoramic sight and the elevation by a quadrant. The point of burst in the air of shrapnel is regulated by an instrument called a fuse setter. Shell burst is regulated upon striking by the automatic action of the percussion fuze. The battery commander selects a position, generally some distance from the guns, where he can see the target or the enemy. His commands are then transmitted to the battery by telephone or by semaphore signal flags. He determines the direction in which the guns shall point and the elevation to be given them by the battery commander's telescope or aiming device and the distance to the enemy is found by means of a portable range finder.

On account of the lack of aeroplanes, our field artillery has had little practice in the use of aeroplanes in the observation of fire and in locating targets.

The system of using the aeroplane in the regulation of artillery fire by the Argentine Field Artillery, described by Col. Ricardo Sola, is as follows:

"After bracketing (firing over and short) the target, the battery should be prepared to fire two salvos with percussion shell. When the aeroplane reaches the position agreed upon, usually above the battery and at an altitude of 500 to 800 meters, the

first reference salvo is fired with the shorter range of the bracket increased by 100m. after an interval of 5 seconds, the second salvo is fired with an increased range of 300m. The front covered should be at least 100m. If, after the reference salvos the aeroplane continues moving toward the enemy, the battery commander infers that the observer has failed to note the fall of the projectile and the salvos are repeated. The report of the observer should indicate graphically the striking position of the salvos with reference to the objective and contain all other useful information obtained; it is thrown from the aeroplane to reach the ground in rear of the battery. Signal rockets flags, etc., may be used to convey information when agreed upon.

"Each battery is provided with four pieces of white cloth which can be united in pairs to make two signal flags two meters square; these are stretched on the ground in the rear of the battery, one near to the centre gun and the other about 100m. farther to the rear in the plane of fire. When the aviator's report is satisfactory, the signals are removed; otherwise, the observation is continued."

I have used the above foreign item to impress readers with the fact that away down in Republic of Argentina, South America, the field artillery service is, in that respect, superior to our own field artillery. Yet, the aeroplane is an American invention.

Field Artillery commanders naturally seek the best possible cover and concealment for their guns. This renders accurate identification of artillery targets very difficult and again the aeroplane asserts its military value. The target once identified, the question of accurate range becomes uppermost. Bracketing for range then becomes the supreme test of battery efficiency, for well-directed fire usually produces a noticeable effect, while poorly adjusted fire produces, as a rule, no effect, wastes ammunition, and encourages the enemy.

We have no tractor sets for siege howitzers such as have created such havoc for the Germans and Austrians. The Austrian 30.5 cm. (12 inch) automobile mortar shares with the Ger-

man 28 cm. howitzer the distinction of having wrought the greatest destruction. The Germans have used a few 42 cm. ($16\frac{3}{8}$ inch) mortars with great success, notably in battering down the Belgian fortifications, at Liege.

The 4.7-inch gun and the 6-inch howitzer are the standard heavy field artillery of our service. They usually operate with a field army, being detached as occasion demands. The present ammunition supply is 168 rounds per gun with the battery or 84 rounds in the case of the howitzer. The caisson and its limber are both placed alongside the gun to give the cannoneers better protection, but at the expense of being a more vulnerable target. This condition seldom occurs, however, as all artillery is habitually concealed behind hills, trees, etc. (All artillery is vulnerable to attack by infantry and cavalry while on the march.) These guns are to be used in taking up the work of the 3-inch guns when the range exceeds 4,000 yards. Long range firing is to be avoided unless the effect is apparent, primarily its use should be to combat hostile artillery, to cover deployment of friendly infantry and artillery, to prevent similar deployment of the enemy, to assist in flanking and enveloping movements, to destroy material objects and to cover pursuits or retirements.

In rear-guard actions the heavy guns may be used to gain time by their long range firing.

The Field Artillery service calls for high-grade men of education, good judgment, and genuine courage. They must, first of all, be good horsemen. Their day's routine is very strenuous, caring for their animals, guns, limbers, and personal equipment. This service, notwithstanding, is very fascinating and absorbing. A good all-around field artilleryman requires, perhaps, three years in the making. This contemplates a good working knowledge of drill regulations; wigwagging and signalling by semaphores, buzzer, or telephone; ability to make and read military maps; the care, use, and adjustment of fire-control telescopes and observing instruments; care and preservation of battery equipment; packing on animals for mountain artillery; hippol-

ogy, equitation, horse training, first aid, hygiene and sanitation; ability to instruct recruits, i.e., imparting of knowledge already obtained to others.

To perfect each man in the above subjects devolves upon all officers and non-commissioned officers from the battery commander down. A school for non-commissioned officers and selected privates is usually maintained in addition to the regular battery instruction periods and drills.

The 3.8-inch howitzer and the 3-inch gun carriages, models 1913, are of the split trail type. Many parts of the carriages are interchangeable. These carriages permit elevations exceeding 50 degrees and are adapted to the attack of air craft.

A 7.6-inch siege howitzer and carriage have been designed and are under construction. This battery will be divided into two loads for transport, each load 8,000 pounds. The projectile weighs 240 pounds, muzzle velocity 1,100 feet per second; maximum range at 40 degrees elevation will be 11,000 yards. By using a 190-pound projectile with a very long, sharp head the muzzle velocity will be 1,350 feet per second and the maximum range 12,250 yards.

A 9.5-inch siege howitzer and carriage are being designed. The projectile weighs 480 pounds, muzzle velocity 1,200 feet per second, maximum range at 40 degrees elevation will be 11,000 yards. Greater range can be obtained with a lighter projectile. It will be subdivided into five loads for transport, the heaviest about 11,000 pounds.

In order to increase the maximum ranges lighter projectiles are under consideration for the 4.7-inch gun and the 6-inch howitzer.

A meter base Goerz range finder has been adopted and is being manufactured in this country. It weighs 25 pounds and is to be carried on off horse or suspended from the saddle. The maximum range is 20,000 yards; power 15; field 2.4 degrees. It has means of measuring angle of sight and for quick adjustment.

Goerz scissors observing instrument is also under manufacture in this country.

To facilitate the observation of fire from positions near the gun, observation masts and ladders are mounted on caissons. These ladders are folded for transportation but are quickly raised for use with the observer's seat at a height of twenty-five or thirty feet.

With each battery it is proposed to carry two machine-gun caissons with 4,200 rounds of ammunition.

The accuracy life of 3-inch field guns exceeds 5,000 rounds under battle conditions.

An anti-air-craft gun firing a projectile weighing six pounds, with a muzzle velocity of 2,400 feet per second has been developed.

Yale University maintains four batteries of field artillery. The University of Minnesota, Perdue University, and the University of Illinois each maintain one battery of field artillery. Students of Harvard and Brown University are members of batteries.

The following general items were obtained from "Notes on Field Artillery, Army Service Schools."

Howitzers enable a division to act independently.

The tactical artillery unit is the battalion.

The Germans with 6.4 guns have the highest percentage per 1,000 rifles: the United States with 3.1 the lowest.

Artillery can easily keep up with the troops it accompanies.

In advancing to position it usually moves at the trot, in occupying position at the walk or trot. It seldom moves at the gallop, but when circumstances require, it gallops in line for short distances only. Average march for a battery is fifteen to twenty miles per day.

"The statement that 'a battery seen is a battery lost' still holds true. In the Balkan wars, the Bulgarians relied upon long distance firing. The Serbians usually tried to get within 2,000 yards. At Yenidze-Yardar, the Turks held up two Greek

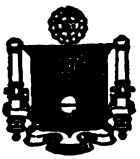
divisions by covering a bridge at 6,800 yards. As a rule, rather than cross exposed areas, extreme ranges were used or darkness was awaited. In order to be able to deliver an effective fire, the artillery must take its chance and not be afraid to suffer losses. On the march, artillery must be placed with a view to security and availability. Artillery is usually not assigned to the advance guard of a force smaller than a brigade. It is not the size but the mission of the command that should determine the strength in artillery. A pursuit will soon resolve itself into attacks on well-defined positions which the retreating force defends to cover the assembly of its march columns on the roads. A retreating force which adheres to roads will outdistance a pursuing force advancing across country.

"Mountain artillery is especially suited to accompany the infantry line. In considering a position, protection is secondary to ability to deliver effective fire. Advantages of positions behind the crest are, greater mobility, ability to act by surprise, greater field of fire, hostile observation made more difficult, ammunition supply easier.

"A battery occupies a front of 100 yards, a battalion 400 yards, a regiment 900 yards. Light guns are rarely placed in tiers. With howitzers or heavy guns in the second line this may be done. Firing over infantry must be considered as the normal procedure and is not dangerous. The best position for the artillery in supporting the infantry is 1000 yards in rear of the infantry line, in which case the artillery can support the infantry up to 200 yards from the hostile trenches, and on the defense until the hostile attack arrives within charging distance. In offensive action, the necessity of getting within suitable and effective range of the hostile positions will usually govern."

CHAPTER XVII

THE COAST ARTILLERY CORPS



THE Coast Artillery Corps is charged with the care and use of fixed and movable seacoast batteries, including submarine mine defense of harbors.

This Corps is administered by the Chief of Coast Artillery, Major General E. M. Weaver, as a bureau of the War Department, and who by virtue of this office is a member of the Board of Ordnance and Fortifications. He is an additional member of the General Staff Corps and the advisor and informant of the Chief of Staff in respect to the business under his charge.

The authorized strength of this Corps, 715 officers, and 19,019 enlisted men, will be increased by five annual increments, July 1, 1916 to July 1, 1920, to 1,200 officers and 30,039 enlisted men, organized into battery service units in each Coast Defense Command by the Coast Defense Commander and be given local numerical designations. There will be twenty-two bands.

During the Civil War and for thirty years following our coast defense armament consisted of smooth-bore, muzzle-loading cannon of various calibers, including 15-inch and 20-inch guns mounted on barbette carriages. Black powder and spherical shot and shell were used. This harbor defense gradually passed from a state of highest comparative efficiency with that of other nations in 1860, to one of extreme inferiority in 1895. Congress neglected to keep apace with the foreign development of breech-loading, rifled cannon using elongated projectiles and brown prismatic powder. There were no industries in this country to turn out this type of armament and ammunition. In 1883

Congress directed a joint board of Army and Navy officers to report on ways and means of providing adequate modern coast fortifications. This board known as the Gun Foundry Board, submitted its report in 1884. The following year Congress directed the President to appoint a new board, since known as the Endicott Board, to examine and report the seaports at which fortifications or other defenses were most required; the character and kind of defenses best adapted to each; and the utilization of torpedoes, mines, and other defensive appliances. The schedule laid down by the Endicott Board was very comprehensive and provided for fortifying twenty-four harbors. Guns of various calibers from 8 to 12 inch and 12-inch mortars were provided. Provision was also made for submarine mine projects for the most important harbors.

In 1905 President Roosevelt appointed a board of officers and civilians, since known as the Taft Board, to review the unfinished schedule of the Endicott Board, in the light of more recent inventions and discoveries, affecting armament and ammunition and to provide additional armament.

About $175,000,000 has been expended on the projects of these boards. The Government has depended almost entirely upon private industries for the manufacture of armament and accesories and ammunition. This has resulted in many new industries, requiring enormous capital and employing thousands of men.

Further evolution in modern gunnery and naval attack incidental to the European war now renders another modification necessary. Another board, officially designated the Board of Review, is now in session.

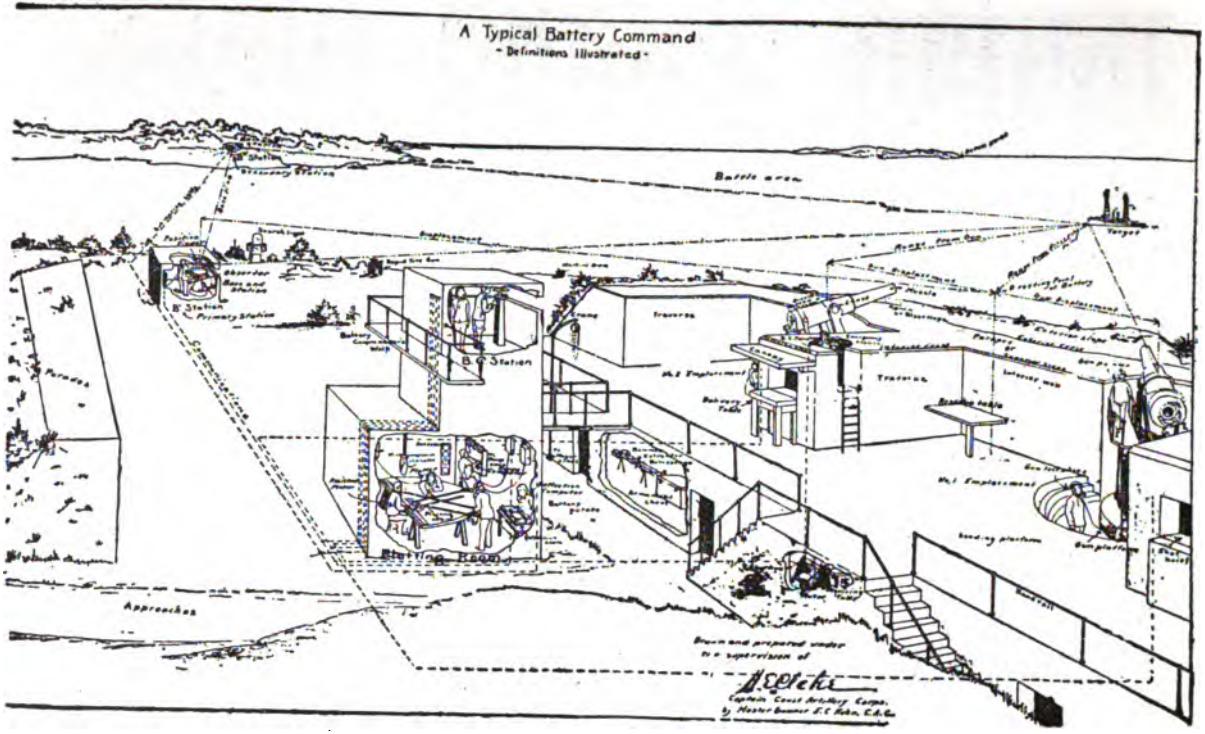
Additional fortifications are now necessary due to the completion of the Panama Canal, and for the defense of our Insular Possessions.

Alterations are being made to increase the area of fire of guns and mortars already emplaced. New guns of 14-inch caliber and new mortars of 19,000-yards range are now being manu-

Coast Artillery School, Fort Monroe, Va.

Corner of operating room, radio section, Coast Artillery School. Enlisted men's department

Classes in the Enlisted Men's School. Coast Artillery Corps, Fort Monroe, Va.


A Typical Battery Command
- Definitions Illustrated -
Battle area
B.C. Station
Approaches
Drawn and prepared under the supervision of
Captain Coast Artillery Corps

factured. The 16-inch gun is being prepared for mounting as part of the Canal Zone defense.

Practically every important seaport in the United States, Hawaii, Philippines, and entrances to the Canal Zone, are fortified. Mortars and gun batteries are grouped and placed so that one battery commander can command several guns. Each fort and battery are named after distinguished individuals, generally an American officer, as Fort Grant; Battery Upton. Batteries of similar calibre are grouped into fire commands and fort commands under high ranking officers. All fire and fort commands of a particular harbor defense are called a Coast Defense Command under a Coast Defense Commander. There are 30 Coast Defense Commands, 16 of which have regimental bands. Coast Defense Commands are grouped into Coast Artillery Districts, commanded usually by Brigadier Generals. There are five such districts, two on the Atlantic and one on the Pacific, one in the Hawaiian Islands and one in the Philippines.

To furnish one relief for the seacoast batteries and submarine projects already installed 1,942 officers and 47,000 men are required. In actual hostilities, such as prevailed in the Dardanelles for many months, two reliefs would be required. The policy of the War Department contemplates that the regular Coast Artillery force shall man all of the batteries and mine projects beyond the continental limits of the United States and all of the mine projects and one-half of the batteries in the United States, the other half being manned by National Guard Coast Artillery. The National Guard Coast Artillery thus far has supplied only about fifty per cent. of its quota.

To maintain coast fortifications in even a semi-efficient condition is a very expensive proposition both as to ammunition and personnel.

Service in the Coast Artillery Corps is technical, scientific and mathematical. It calls for a high grade of intelligence and special training in mastering the complex details of range finding, spotting, handling of high-explosives, electrical and mechan-

ical apparatus, precision in adjusting, observing and calculating instruments, loading, planting, and firing of submarine mines, testing of cables, installation and upkeep of extensive underground systems of telephone, signaling, radio, and semaphore sets, power plants, storage batteries, etc.

The defense of our coast line includes:

1. Permanent fortifications and submarine defenses manned and operated by Coast Artillery troops.

2. Semi-permanent fortifications and field works for the protection of the permanent fortifications against capture by small raiding parties landed from ships, manned and operated by Coast Artillery supports. They may be troops of the Coast Artillery Corps or of the mobile Army.

3. Mobile troops to resist the landing of large bodies of troops near cities and fortified harbors and for the defense of strong semi-permanent work on interior lines. These troops are known as coast guards.

Permanent fortifications comprise three distinct elements of armament or weapons of defense:

(*a*) The direct-fire rifles of 3-inch to 16-inch calibre mounted enbarbette or on disappearing carriages.

(*b*) Mortars for high angle fire.

(*c*) Submarine mines for underwater attack upon the unprotected hulls.

When the warships of an enemy undertake to enter our seaports and harbors, the Coast Artillery, therefore, will be expected to attack their side armor at the water line with high-power, disappearing rifles and armor-piercing shot; from above, upon their decks, by mortar shells filled with explosive; and from beneath, with submarine mines containing 200 pounds of high explosives, whereas, the attacking fleet has only direct-fire rifles with which to reply.

Keen scientific rivalry prevails between the makers of projectiles, powder, and armor. This constantly advances the efficiency of modern armament. The projectile maker endeavors

to produce a projectile of such tensile strength, density, and toughness as will perforate the thickest armor at battle ranges without shattering or fragmenting. To hurl cast-iron shot at the side armor of warships is a waste of both powder and projectile and a sacrifice of morale. Such a projectile would scarcely mar the surface of the armor.

To build a projectile of the desired perforating potentiality and not have the necessary quality of powder to impart to it the required velocity to perforate the armor attacked indicates another critical stage in this scientific contest. The armor maker is ever striving to improve the quality of his armor so that a lesser thickness and weight will assure the desired protection to the vitals of the ship. Ten inches of the best armor today has greater power of resistance than 16 inches of the best armor ten years ago. A 12-inch forged steel projectile costs about $200.

This great rivalry taxing as it does the greatest scientific minds of the nation continually promotes scientific research and development thus materially advancing the iron and steel industries. Mankind is being benefited in countless ways through the rigid specifications established in Army and Navy contracts and through the scientific methods followed in testing quality of articles delivered.

The smokeless powder used as a propelling charge in seacoast guns costs about 60 cents per pound. The charge for a 12-inch mortar is about 25 to 50 pounds, the area of fire being divided into several zones, with a minimum and maximum range to each, depending on the variation and elevation from 45 degrees to 70 degrees. The weight of powder charge for the 14-inch gun is about 600 pounds in order to give its 1400 pound projectile an initial velocity of about 2,300 feet per second, at elevations not exceeding 15 degrees. The time of flight of the mortar projectile for extreme ranges exceeds 75 seconds, but for the direct-fire rifle does not exceed 34 seconds. The projectile of a direct-fire rifle is traveling at the rate of about 25 miles

per minute when it leaves the muzzle of the gun, and that of a mortar about twelve miles per minute.

There has been developed at the Coast Artillery School, Fort Monroe, Virginia, a camera with shutter operating so instantaneously ($\frac{1}{1000}$ of a second) that projectiles can be photographed while emerging from the muzzle and at short distances beyond.

There is no question in target practice as to where the massive projectiles strike, since a great column of water is dashed upward to a height of two hundred feet or more and plainly seen for several miles. Many remarkable long-range firing records have been made the past few years, indicating that our system of fire direction and control is excellent.

Probably the most efficient and economical weapon of coast defense is the modified 12-inch mortar, recently constructed by the Ordnance Department, to attack the decks of warships.

In 1879 Lieut. General Nelson A. Miles was an observer in the Russo-Turkish War. A shore battery of small caliber mortars dropped a few projectiles on the decks of enemy warships at anchor. The damage was slight and the incident passed over by other military observers as purely accidental and of no military importance. General Miles, however, reported this incident as foreshadowing a new form of attack from shore batteries. Our Ordnance Department was already at work improving the crude type of Civil War mortar. Eventually the 12-inch breech-loading rifled mortar, capable of throwing a 700-pound projectile 15,291 yards at 45 degrees elevation, was developed. Recently a modified 12-inch mortar has been developed which with a 700-pound projectile has an extreme range of 19,000 yards and a maximum time of flight of 75 seconds. These mortars are placed in well-protected pits, four mortars to a pit, two or four pits constituting a battery or mortar-fire command. This mortar is designed to attack the least vulnerable part of the warship, its deck.

Brigadier General Henry L. Abbott, Retired, as Chief of the

Corps of Engineers, had much to do with the adoption of this weapon. It had been the naval practice for belligerent ships to engage in action by dropping anchor and opening broad-side fire on shore batteries or other ships. General Abbott contended that with batteries of 8 or 16 mortars so placed as to send showers of heavy projectiles into the air in the direction of belligerent ships at anchor, at least a ten per cent. probability of hits would prevail. The wooden decks of warships would be no match for such projectiles, which passing through into the vitals of a ship would put it out of action and probably sink it. It was not contemplated that this high-angle fire could be used economically at moving targets.

The proof firing and actual tests of mortar fire so completely confirmed these views as to cause naval powers to abandon this form of naval action in favor of attempts to run by the shore batteries at full speed. It then devolved upon the Coast Artillery Corps to develop a system of fire direction and control to utilize high-angle fire of mortars at moving targets. This has been accomplished to a remarkable degree. It is now possible to fire mortars at thirty-second intervals with great accuracy. A natural result in battleship design has been the abandonment of wooden decks in favor of three, four and five inches of deck armor. All of the warships engaged in the naval actions of the Spanish-American War had wooden decks. Now every modern warship in the world has armor-protected decks, undoubtedly a primary result of the development of mortar fire by the United States Coast Artillery Corps.

During the routine drill at the guns preliminary to annual target practice companies are tested by sub-caliber practice at moving targets, at short ranges. For 3-inch guns a 30-caliber gun is rigidly fixed within the powder chamber and is loaded and fired simulating service target practice. For larger rifles and mortars one-pounder and fifteen-pounder sub-caliber guns are used. Service target practice is required annually for each battery, fire and coast defense command unit. Owing to the

great concussion from heavy gun fire and the damage liable to property and to invalid persons living near the batteries in cities, it is necessary for such organizations to conduct target practice at some isolated fortification.

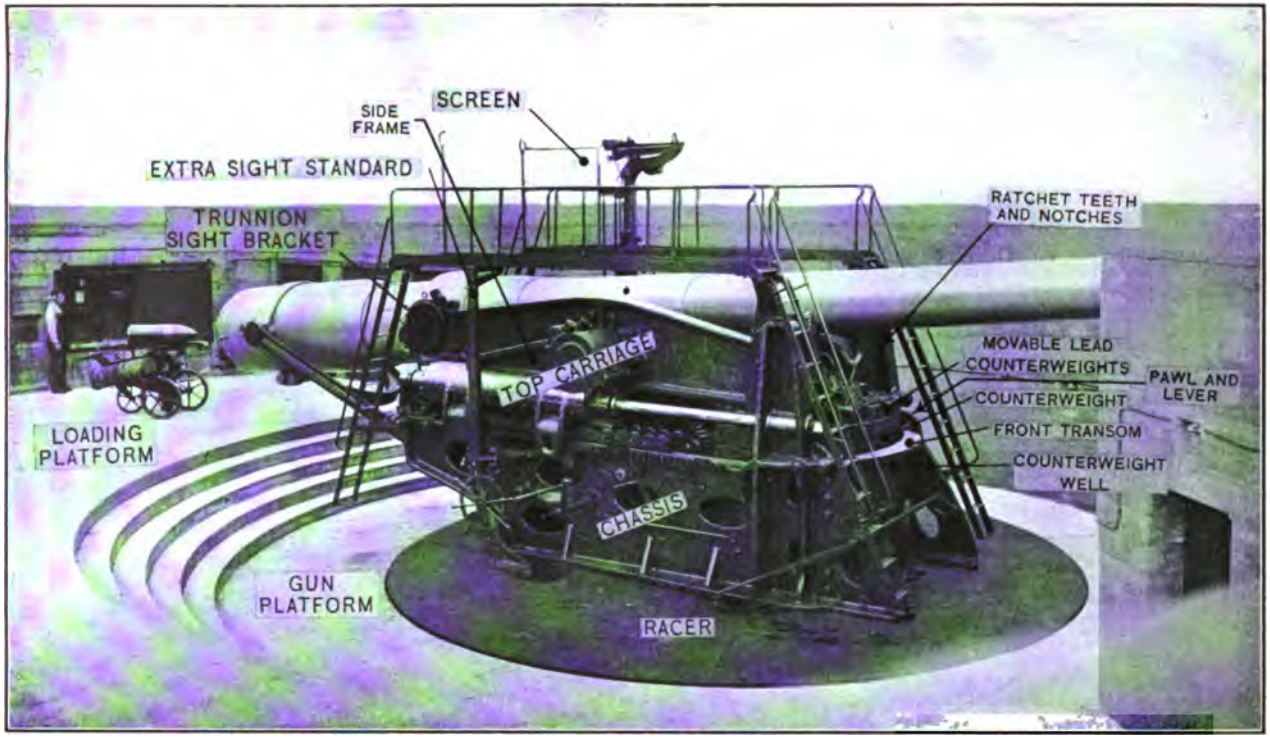
Many individual soldiers of varying degrees of training, education, and aptitude make up the gun crews. This and many other elements contribute to the improbability of making perfect scores at target practice. The distance and direction of the target and its speed must be constantly determined. Each gun must be aimed at a point in advance of the moving target and be fired at a predetermined second of time to assure that the target and projectile will reach the same point simultaneously. Range tables must be computed for each particular lot of smokeless powder. This is done from data obtained from the Ordnance Proving Ground with a testing machine called a chronograph.

These powerful weapons of defense hurl half-ton projectiles with astonishing accuracy at half-minute intervals for distances of from three to ten miles. Accuracy at long ranges is accomplished by bringing to the aid of human vision the most powerful observing telescopes and position-finding apparatus designed by Coast Artillery officers and enlisted men.

The barrier of water interposed between the target and the battery due to the curvature of the earth, which for a range of ten miles would be about sixty-seven feet, must also be taken into consideration. Partly to overcome this and partly to permit of a plunging fire upon deck, batteries are emplaced, when possible, at considerable elevation. Our Atlantic Coast line offers no such natural strategic defense except at the entrance to New York harbor where elevations of about 150 feet can be utilized.

The deviation of the projectile or drift due to the direction and velocity of the wind and the rifling of the gun must be determined for each shot. Other important factors are variation in tide, temperature and density of the atmosphere, temperature

1,046-pound projectiles, 12 in. mortars, and gun caught by camera with $\frac{1}{500}$ second exposure



From Service of Coast Artillery—Hines-Ward

12-inch breech-loading rifle, model 1900. Mounted on disappearing carriage, model 1901. Showing front of carriage

of the gun, the powder charge and the powder magazine, the degree of uniformity in loading, the weight, form and density of the projectile and its diameter measured to 3-1000 of an inch.

Each gun and carriage has inherent peculiarities of action which must also be understood. The wonder is that with all these known variables several shots in succession from batteries of two or three guns can be made to hit targets representing only a small section of a battleship. Very satisfactory results have also been obtained by night firing, at targets illuminated by 60-inch search lights.

With a view to much needed improvements in both searchlight and carbons supplied by private firms, Capt. John C. Ohnstad, C. A. C. Instructor, Coast Artillery School, was assigned the special task of developing the searchlight and carbons to the highest possible state of perfection and positive action.

His success has revolutionized the searchlight carbon industry of this country and brought the searchlight to a degree of perfection which had baffled the experts of the largest manufacturers of these articles in the United States if not in the world.

To-day American-made carbons are superior to European-made carbons and are being shipped abroad in enormous quantities; whereas until recently foreign-made carbons were in demand in this country. It has been possible with the Ohnstad Carbon to illuminate a target at 20,000 yards range at Fort Mills, Corregidor Island, Manila Bay, Philippine Islands, the best previous range of illumination being 12,000 yards. The value of this Army contribution to American industry may be better appreciated when it is considered that increase of range of illumination varies as the fourth power of the distance.

In order to better train Coast Artillery officers for their various functions in time of war and to stimulate interest in the methods of attack likely to be used by a hostile fleet, a war

game has been developed. This war game is set up in a large room where it is played under rules approximating war situations, based upon the probability of hitting, rapidity of fire, changes in atmospheric conditions, speed of the enemy's ships, and the gun fire to be expected from them. The equipment consists of land and sea areas, miniature ships, batteries, searchlights, position-finding stations, etc. Sets of miniature warships representing the navies of the various powers are provided. This war game is especially useful at fortifications where battleships are seldom seen.

During the winter months daily drills are held indoors, constituting what is known as gunners' instruction, leading up to examination for rating as first or second class gunners, which carries an increase of pay.

Electricity plays a very important part in Coast Artillery service. The non-commissioned staff consisting of sergeant majors, junior and senior grade, master electricians, engineers, firemen, electrician sergeants, first and second class, master gunners, are gradually promoted from the grades of private, corporal, and sergeant, and usually after a course of instruction at the Coast Artillery School. They are allowed suitable married men's quarters.

Service in the Coast Artillery Corps is strenuous though attractive to those who desire to live on the seashore and to receive a good working knowledge of electricity, mechanics, and engineering while serving an enlistment in the Army.

For the practical training and education in technical duties of officers and enlisted men the Coast Artillery School at Fort Monroe, Virginia, is maintained. It is unexcelled as a technical school of the limited scope covered by its courses of instruction.

The regular course and the advanced course for officers are each completed in one year. The courses embraced are as follows: Coast Artillery matériel, gunnery, artillery defense, land defense, explosives, electrical engineering, mechanical

and steam engineering, and submarine mining. The object of the advanced and special courses is to amplify for specially selected officers the instruction and work of the regular course, with a view to improving their qualifications as instructors, preparing them for duty at the Army War College, and fitting them for duties of the General Staff of the Army. One or more graduates of the school attend the Boston School of Technology each year.

The courses for enlisted men at the Coast Artillery School embrace instruction in artillery, electricity, mechanics, radio-telegraphy and administration or clerical work. The yearly attendance is about ninety-five.

The Director of the enlisted men's department is an examining officer of the Department of Commerce for the examination of students in radio-telegraphy who attain the necessary speed for commercial license.

It is believed that no other educational institution in the world attempts to cover as much ground in the same period of time as officers and enlisted men are required to cover at these schools.

The Chief of Coast Artillery in his annual report for 1915 recommends that legislation be sufficiently elastic to authorize the President to increase at any time the Coast Artillery forces by the number of officers and men necessary to man any new fortifications that may from time to time be authorized by Congress.

With reference to the use of large caliber howitzers and guns he states: "Inasmuch as there has been some discussion as to mounting 16-inch and even 17-inch guns afloat, it is a question whether the dimensions of our primary shore guns should not be made of larger caliber than 16 inches. The advantages that come from increasing calibers are not only those due to greater striking energy, greater accuracy of fire, and greater perforation of armor, but also those due to increased weight of explosives carried in the cavity of the shell. The weight of the explosive

carried increases as the cube of the diameter, but experiments have shown that the destructive effects caused by the explosion of a high explosive shell charge, increases in greater ratio than the cube. It will, therefore, be understood that an exceptional advantage is to be obtained from the fact alone that the weight of the shell charge is increased. The destructiveness of the forty-two centimeter and other large shell guns used by the Germans in the land warfare in Europe have clearly brought out this fact. It was on these considerations that the Chief of Coast Artillery recommended that our present system of guns mounted in fixed positions should be modified by providing a new type of armament that would involve the use of howitzers of the largest practicable shell capacity, one type to be mounted on railroad trucks so designed as to permit the howitzers to be fired therefrom and the other of the maximum size practicable for wagon-road transportation.

"The effectiveness of the Hammond radio-controlled torpedo appears to have been well established. The Board of Ordnance and Fortifications recommended favorably to the Secretary of War as to the merits of this invention. The Secretary recommended to Congress that the rights of the inventor be acquired to the end that this new type of weapon may be installed in a few of our more important coast defenses."

In order to maintain our peace and make certain the security of our people within our own borders, the country must have not only adequate, but thorough and complete national defense, ready for any emergency. We must have a sufficient and effective regular army and a provision for ample reserves, already drilled and disciplined, who can be called at once to the colors when the hour of danger comes.

We must have a navy so strong and so well proportioned and equipped so thoroughly ready and prepared that no enemy can gain command of the sea and effect a landing in force on either our Western or our Eastern coast. To secure these results we must have a coherent and continuous policy of national defense, which even in these perilous days the Democratic Party has utterly failed to develop, but which we promise to give to the country.—From Republican Party Platform.

CHAPTER XVIII

THE SUBMARINE DEFENSE OF HARBORS

THE Russo-Japanese War and the present European War have demonstrated that the most deadly weapons of seacoast and naval warfare are the submarine mine and torpedo. The greatest naval losses of both wars have been the sinking of warships and merchant vessels by mines and torpedoes. It was the blowing up of the battleship *Maine* in Havana Harbor, February 15, 1898, by a submarine explosion that precipitated our war with Spain.

Bushnell invented the submarine mine in 1777. Fulton improved it in 1812. Colt added the electric element in 1863. Brigadier General Henry L. Abbott, U. S. A. Retired, developed the electrical and other features and applied them to a complete and practical system of mine defense. Our Coast Artillery Corps has further perfected its use since 1901 to the present efficient system of submarine defense of harbors.

A single submarine mine exploded at the proper time will disable or even sink the largest battleship. The Coast Artillery of the Turkish army in closing and keeping closed the Dardanelles was pitted against the persistent and combined attack of the allied fleets of Great Britain, France, and Russia. This will probably go down in history as the most effective instance of seacoast and submarine mine defense thus simulating what should be expected of our coast defenses should our seacoast and harbors be subjected to naval and land attack. *Our Atlantic seashore, however, offers no strategical barriers such as those at the Dardanelles and Gibraltar.*

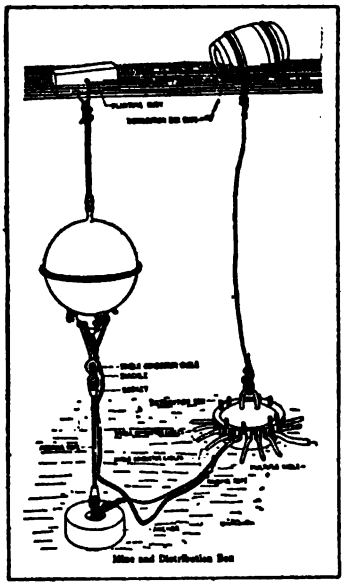
Mines are principally used in defensive operations within harbors, whereas torpedoes are primarily an element of offensive warfare by warships. Mines are immobile and lie in wait for the oncoming warships, whereas the torpedo is a cigar-shaped form of weapon provided with a propelling force by which it can be propelled under water in the direction of the enemy's ship at about forty miles per hour for several thousand yards to be exploded upon impact with any object in its path. The quantity and quality of the explosive is practically the same in both the torpedo and the submarine mine (about 200 pounds), either gun cotton or trotol.

In the United States the torpedo is a naval weapon carried on all types of warships from submarines to battleships and the submarine mine is a weapon of harbor defense manned by the Coast Artillery Corps. The Navy is also equipped with submarine mines which can be strewn in the path of pursuing warships to be exploded by contact. Naval mines ordinarily are uncontrollable and are dangerous alike to friend and foe and neutral shipping and, therefore, are to be used only as a last resort.

The submarine defense of harbors is a confidential military problem. The general features of our system are known, however, by all nations. American citizens are welcome at all of our fortifications in time of peace and can receive a very good idea of this and other weapons without involving the disclosure of the confidential features.

The great force of mine explosions is indicated in these illustrations. In the first photograph the mine was near the surface of the water. A spire of water was shot upward about three hundred feet just before the tiny target, which extends seven and a half feet above the water, reached the plotted position of the mine. In the second photograph the mine was quite deep in the water and the explosion gave a mushroom-like upheaval completely obscuring the target. The third is the most common type of explosion, an enormous volume of water being thrown upward about fifty feet from a crater about ten to

fifteen yards in diameter. The photographers in each case were in an open boat about four hundred yards distant from the explosion. These explosions were made under direction of the author as Mine Commander of the Narrows Mine Command, Fort Wadsworth, New York harbor in 1911 and 1912.



The term "mine field" is used to designate the water area in which groups of mines are planted in the channels and connected with a common shore station called the mining casemate.

Briefly, our system of submarine mines consists of one or more groups of mines placed across the harbor channel in the course of incoming warships and within protection of the seacoast batteries. Each mine is held in place at the proper submergence by a heavy cast-iron anchor, attached to the mooring cable. A specially designed steamer called the "mine planter" takes the mines out from shore loaded and ready for planting. A trained detail from the mine command plants the mines at the proper distance apart, one at a time. A glance at the diagram will give a better understanding of the successive steps in mine planting and exploding.

The successive steps of planting and operating a mine field are as follows:

The reels of submarine cable weighing about four tons, each containing about half a mile of cable, are taken aboard the mine planter and placed on cable reel frames. The end of the first length of cable is passed ashore and through the under-

ground entrance to the casemate where each of the single conductor cables is connected to an operating board and system of switches for sending the electric currents out through the cable to the respective mines. Mines are exploded by an electric current passing through a commercial type of electric primer.

The mine planter steams slowly out toward the mine field, the cable being unreeled on the bottom of the sea. When the end of a reel of cable is reached this end is lowered over the bow of the planter into a yawl boat. The end of the next reel is likewise placed in this yawl boat which serves as a float on which the two cable ends are joined by water-tight joints and a strong junction box and then lowered to the bottom. When the mine planter has laid the necessary lengths of cable for a group of mines the ocean end is placed on a motor power boat equipped as a float, called the Distribution Box boat or "D. B." boat. On it each of the single conductor cables for the group of mines is in turn securely joined to its corresponding unit of the multiple cable by a water-tight joint and through a large, heavy junction box. These cables all bound into one massive cable are insulated from each other and the whole is protected by a jute and wire covering called armor to protect it from the elements of the sea and from marauders. One harbor may require $100,000 worth of submarine cable.

The planter then returns to the mine wharf and takes aboard the mines which have been loaded and tested. When everything is in readiness the planter runs slowly past the D. B. boat casting off the mine cables in their proper order. When the submergence of each mine has been determined the mine buoy is removed. When all mines have been planted and connected with the main cable the boats return leaving no visible trace of the submerged mines.

The mine case is made by welding together two galvanized steel hemispheres, 32 inches in diameter. If the water is very deep and there is a strong current or tide it is necessary to insert a cylinder between each hemisphere to give the mine suffi-

Sizes of mine cases

Mine and anchor ready for command "Let Go"

A group of mines, cable, and anchors ready for mine planter

Copyright by Edwin Levick

This submarine mine was exploded near the surface of the water and cast a spire of water to a height of about 304 ft.

"Mushroom" submarine mine explosion

Typical mine explosion. This mine was deep in the water, and if in contact with a battleship would have sunk it

cient buoyancy to keep it from being depressed far beneath the surface. The water over the mine case has the same effect as tamping dirt over a stick of dynamite placed in a hole drilled in a rock or the trunk of a tree. A mine placed several feet under water has the additional advantage of coming in contact with the hull of a warship beneath the line of armor protection and nearest the vitals of the ship. This submergence also obscures the mine from view.

A recognized characteristic of practically all explosives is that they are harmless when ignited in open air, but very destructive when confined in a projectile, mine case, or torpedo.

It is not surprising that the Admiral of a fleet hesitates to take his warships into water area which he has every reason to believe is defended by submarine mines, the position of which he cannot know and any one of which may sink his largest battleship.

The planting and exploding of mines at the right time and with precision is the most difficult problem of the Coast Artillery Corps. The mathematical features of this problem are most exacting. In determining the proper radius of the spherical mine case to maintain proper submergence it is necessary to take into consideration the depth of water, strength of the current and tide, depressing effect of mooring ropes and cables, at varying stages, weight of explosives, mooring rope, and other cables, drifting debris, weight of mine case, etc.

Mine planting is a most interesting and fascinating work and calls for superior skill, technical knowledge, courage, and intelligence on the part of all concerned. Although the explosives used are the most powerful known, no member of our forty-four mine companies has been killed through premature explosion in a period of fifteen years that the Coast Artillery Corps has been in charge of this weapon of defense.

Mine planting must be rapidly accomplished with consummate skill under the watchful eye of the Mine Commander and his assistants. The planter is provided with two sets of davits

on the port and starboard quarters for swinging the loaded mine and anchor clear of the planter ready for the command "Let go." When the mine cases are properly joined to their respective cables they are in turn clamped to their respective anchors. Then the anchors are picked up and swung clear by the forward or anchor davit, each being suspended and handled with a differential triplex block and chain. The chain carries a patent tripping hook with line attached to be held and tripped by a soldier standing near the davits at the command "Let go." Mine anchors weigh 2,000 to 5,000 pounds. Automatic anchors are now supplied which can be adjusted to give any desired submergence.

"It is my earnest wish and prayer that the people of this country shall awaken to the responsibility and duty that confronts them, and that the Congress of the United States representing the people will see their duty clearly in the premises by immediately enacting into law measures that will make of our country one that we can be proud of. Let our Army and our Navy be equal to the wealth and power of our country and to its needs. We have 21,000 miles of seacoast to defend; we have the Philippines; we have the Hawaiian Islands; we have the Panama Canal, and so forth, to protect. Let us have the guns, fortifications, and the trained officers, and men that we need, whatever the expense may be. It will be cheap in the end, whatever the cost is, because if we come to war with a first-class power, such as we will some of these days, the amount of money it would cost us to organize volunteer armies and navies, get the equipment, guns, and so forth, would far exceed all that we would spend in the gradual increasing and making efficient a splendid Army and a splendid Navy."—Representative L. C. Dyer, of Missouri, Commander-in-Chief, United Spanish War Veterans.

CHAPTER XIX

THE MILITIA OF THE UNITED STATES AND THE NATIONAL GUARD

CONGRESS passed the first militia law in 1792 entitled: "An act to more effectually provide for the national defense by establishing a uniform militia throughout the United States." The requirements of this law included compulsory enlistment and performance of military duty on the part of every able-bodied male citizen between the ages of eighteen and forty-five. It required that each person enrolled should, at his own expense, be constantly provided with arms, ammunition, uniform, and equipment, and that mounted officers and enlisted cavalrymen should furnish horses at least 12½ hands high. No uniformity as to bore of rifles, kind of equipment, color or style of uniform was prescribed. "Few armed themselves as was intended and on training days, if the testimony of witnesses can be relied upon, more reported shouldering cornstalks than rifles and such a ludicrous appearance was presented that the entire system soon became a farce. Because the law carried no appropriation for proper arms and equipment, the training days became more and more useless, and the various states, realizing the inadequacy of the militia thus organized, gradually assumed the power of legislating for it, finally dealing with it as a state force, which is really the organization it is considered to be to-day."[9]

If you are a male citizen of the United States, eighteen to forty-five years of age, and there are 21,000,000 of you, you are a member of the United States Militia. You are liable for active service in time of war unless exemption is granted you for disability or religious belief.

The constitution and Congress thus define and interpret the military obligation of citizenship. Millions of our citizens pass through this period of manhood practically unconscious of this military obligation *because Congress has never required any form of universal military training or service.* We are all more or less familiar concerning the organized militia, known as the National Guard.

The National Guard is now undergoing very radical reorganization and expansion to meet the requirements of active service on the Mexican border and the Act of Congress, June 3, 1916, by which the authorized strength is expected to reach 800 guardsmen for each congressman and United States senator, or approximately 425,000 within the next few years. The principal features of this new legislation are:

1. Federalization and expansion of the National Guard as a part of the land forces of the United States.

2. Federal pay for routine drills and instruction equal to twenty-five per cent. of corresponding grades in the Army.

3. War Department regulation of drills and encampments. (Forty-eight one and one-half hour drills and 15 days encampment annually).

4. Organization, equipment, training, discipline and physical examination to conform to the Regular Army standard.

5. Officers to be appointed under the direction of the War Department.

6. National guardsmen employed by United States to receive leave of absence without loss of pay while attending encampment and indefinite leave of absence when in active service.

7. Attendance at Military Service Schools, except West Point.

This act changes the designation of the Division of Militia Affairs to the Militia Bureau of the War Department and confers upon the Militia Bureau the status held by other bureaus of the War Department. The Chief of the Militia Bureau is charged with the transaction of all business pertaining to the

National Guard and the unorganized militia of the United States.

The jurisdiction of this Bureau embraces all administrative duties involving the organization, armament, instruction, equipment, discipline, training, inspection and payment of the National Guard; the conduct of camps of instruction of the National Guard, and the administrative duties connected with the preparation of the National Guard for participation in field exercises and maneuvers of the Regular Army; the mobilization of the National Guard in time of peace; and all matters which do not under existing laws, regulations, orders or practice come within the jurisdiction of the General Staff or any division or bureau of the War Department.

The Governors of states are the commanders-in-chief of their respective National Guard organizations. They appoint Adjutant Generals and staff officers for administrative purposes. When the National Guard is drafted into the Federal Service pursuant to authorization of Congress to repel invasion, or insurrection, or to execute the laws of the Union, the various organizations lose their identity as state troops and are entirely under the direction of the War Department. It may be called into Federal Service for the purpose mentioned without draft and upon termination of such service revert to its status as state troops. Congress in July, 1916, authorized the President to use the National Guard beyond the continental limits of the United States.

Service in the National Guard is by voluntary enlistment for a period of six years, three in actual service and three in the reserve. Officers and non-commissioned officers from the Regular Army are detailed as instructor-inspectors and sergeant instructors.

The home station of a militia organization is known as its mobilization camp. The places of assembly when war is imminent or for joint operations are known as concentration camps.

Department Commanders have charge of all matters pertaining to mobilization.

The War Department plan as prepared by the Militia Bureau comprising tactical organizations and distribution of a National Guard force of about 400,000 troops constituting four field armies of sixteen divisions each with three additional cavalry divisions including three regiments of Regular Cavalry is presented in a table in pouch of cover.

During the summer months the mobile troops of the National Guard participate in extensive maneuvers in various parts of the country. The policy of the War Department has been to restrict the instruction given in the summer encampments to the field training of the smaller units and in maneuvers involving regimental command.

The National Guard of Texas, Arizona, and New Mexico were called out for active service along the Mexican border by the President in May, 1916, and of the other States in July, 1916.

The manner in which the State Militia has responded in providing a reasonable number of officers and enlisted men for Coast Artillery service is very discouraging. It was anticipated by the War Department that 711 officers and 17,329 enlisted men could be thus obtained. After several years hard work and liberal appropriations for equipment of state armories with coast defense systems, there are only *about* 450 officers and 13,500 enlisted men enrolled. In ten states bordering on the Atlantic Coast no Coast Artillery Corps National Guard is maintained.

Coast Artillery Corps armories are being completely equipped as battery fire and battle commands. A rapid-fire gun, a 10-inch or 12-inch rifle and a 12-inch mortar are mounted therein.

The Thirteenth Coast Artillery District, Brooklyn, N. Y., has been thus equipped for many years and in addition maintains a system of firing guns and mortars by compressed air, using

rubber-nosed, hollow projectiles. During night drills lights are extinguished and searchlights put in action, the armory floor representing the coast defenses of New York harbor. Presently a miniature papier-maché battleship about twenty-five feet long appears in one corner, moving diagonally across the armory floor. The searchlight operator soon discovers this attempt to run by the shore batteries and directs the searchlight upon this warship. A mimic naval and shore battery engagement follows. Giant firecrackers simulating 13-inch and 12-inch guns are exploded by electricity on the battleship and by the shore batteries. A terrific bombardment ensues while the 5,500 spectators in the galleries look on in wonder and amazement. Presently a miniature airship approaches and drops a bomb or two at the warship. By this time the ship may have reached a submarine mine, which explodes, shattering it into fragments. These highly proficient Coast Artillerymen thus demonstrate in an educational manner the work of all elements of our coast defense system.

The annual report of Major General A. L. Mills, U. S. A., Chief of the Division of Militia Affairs, for 1915, contains the following items of general interest:

"According to the latest returns, the aggregate strength of the organized militia is 8,705 commissioned officers and 120,693 enlisted men, a decrease over the year 1914 of 87 officers and an increase of 1,442 enlisted men. Definite progress has been made during the year toward the development of the militia into an efficient field force.

"There have been gains during the year in cavalry, field artillery, and machine-gun units, especially in the last-named element, but there are still serious deficiencies in those respects, as well as in engineers, signal and sanitary troops. On the basis of coast defense requirements, there is a deficiency of 21 per cent. in company units 38 per cent. in commissioned officers and 57 per cent. in enlisted men.

"Correspondence courses for officers have been carried on in a

majority of the states. An examination of the reports of attendance at armory drills shows an unsatisfactory condition in this respect. Absenteeism is a serious drawback to good armory instruction, but, as effective means to enforce attendance are lacking, the fault must be considered as inseparable from the existing militia system. All reports agree as to the excellence of the instruction given at the special camps of instruction for officers and non-commissioned officers. The number in attendance at these camps was greater than ever before. State camps of instruction were well attended and the programs of instruction were well arranged and carried out. The desire for good instruction is shown in the fact that the demand for regular officers at state camps of instruction greatly exceeded the available supply.

"Reports of small-arms target practice show a very unsatisfactory state of instruction. No improvement is shown over the previous year; if anything, a worse condition is shown to exist. Preliminary training for target practice, including gallery practice is generally neglected. According to the lowest standard that could possibly be accepted, target practice can be considered as satisfactory in only eight states and is unsatisfactory in all the remaining states.

"Estimates made by inspecting officers of the minimum that would be required for organizations to take the field as an effective force, reckoning from the date of muster into the United States service, with present personnel, each unit being brought to war strength after muster, vary from two months to twelve months. It is probably nearly correct to say that six months of very active preparation would be required to fit the militia as a body for encountering in the field a well-disciplined enemy.

"Substantial progress has been made in supplying to the states equipment in wagon transportation, including harness, necessary for the field and combat trains of existing units. The total number of wagons required for this purpose is

3,572 and this number has been made up with the exception of 316."

The National Guard under the stimulating influence of federal pay, increase in personnel, and other features of the National Guard legislation should rapidly take on new life and become a great military asset of the Nation.

"In the spirit of Americanism, action must be taken for the common defense. We must be ready, in spirit, arms and industry. Preparation in arms requires:

"A Navy restored to at least second rank in battle efficiency;

"A regular Army of 250,000 men, fully armed and trained, as a first line of land defense;

"A system of military training adequate to organize with promptness, behind that first line of the Army and Navy, a citizen soldiery, supplied, armed and controlled by the national Government.

"In our democracy every male citizen is charged with the duty of defending his country. This duty is not new. It has existed from the foundation of the Government. Under modern conditions it cannot be performed without military training; service without training means slaughter and disaster. As the nation has always recognised and exercised the right to enforce compulsory military service in time of war, so should there be universal military training for that service during times of peace."—From Progressive Party Platform.

CHAPTER XX

THE WAR COLLEGE AND ARMY SERVICE SCHOOLS

THE military educational system of the United States comprises:

1. The Military Academy at West Point, N. Y.

2. Post Schools for the instruction of enlisted men.

3. At each military post a garrison school for the instruction of officers in subjects pertaining to the performance of their ordinary duties.

4. Service Schools:

(*a*) The Army War College, Washington, D. C.

(*b*) The Army Staff College, Fort Leavenworth, Kans.

(*c*) The Coast Artillery School, Fort Monroe, Va.

(*d*) The Engineer School, Washington Barracks, D. C.

(*e*) The Mounted Service School, Fort Riley, Kans.

(*f*) The Army Medical School, Washington, D. C.

(*g*) The Army Signal School, Fort Leavenworth, Kans.

(*h*) The Army School of the Line, Fort Leavenworth, Kans.

(*i*) The School for Bakers and Cooks, Washington Barracks, D. C.

(*j*) The School for Bakers and Cooks, Presidio of Monterey, Cal.

(*k*) The School for Bakers and Cooks, Fort Sam Houston, Tex.

(*l*) The School for Bakers and Cooks, Fort Shafter, Hawaii.

(*m*) The Army Field Engineer School, Fort Leavenworth.

(*n*) The Army Field Service and Correspondence School for Medical Officers, Fort Leavenworth.

(*o*) The School of Fire for Field Artillery, Fort Sill, Okla.

Army War College, Washington, D. C.

Army Service Schools and library, Ft. Leavenworth, Kans.

Cadet Corps and barracks, New Mexico Military Institute, Roswell, N. Mex.

Types of mud ovens for baking bread in the field

Field range and equipment for one company

Field bakery

Enlisted Men's School for cooks and bakers, Fort Riley, Kansas

(*p*) The School of Musketry, Fort Sill, Okla.

(*q*) The Signal Corps Aviation School, San Diego, Cal.

5. The military department of civil institutions at which officers of the Army are detailed under the provisions of the Morrill and other acts.

Prior to our war for independence, the art of war figured very little in the battles with the Indians. Guerilla warfare was common. The Revolutionary War designed to wrest control of the Colonies from one of the greatest military nations of the world, called for a high degree of military training and organization, military art, and strategy. A military force had to be improvised. Raw recruits had to be organized, equipped, trained, and disciplined. The success of the Revolution hinged upon the almost superhuman handling of inferior troops. The essential instruction and training were partially met by giving positions of military rank to experienced foreign soldiers not in sympathy with England, notably Pulaski, Kosciusko, LaFayette, and DeKalb.

Washington's military genius quickly developed. His terse epigrams on the need of military training and preparedness and the danger of relying upon the untrained volunteers are quoted more extensively to-day than the opinions of any other military-statesman critic. The greatest need of the nation, the greatest bulwark against national disaster lay in the establishment of a school of military education and training. It was Washington who lead in advocating military education and the establishment of the United States Military Academy at West Point.

The Service Schools are primarily for the education and training of officers in the science of warfare. The instruction covers a large field requiring the closest application from student officers, thus making competition very keen.

In 1824 a school for artillery was established, which is now known as the Coast Artillery School, Fort Monroe, Va. This school comprises technical and practical courses for both officers and enlisted men.

What is now known as the Army Service Schools at Fort Leavenworth, Kans., originated in 1881, through the efforts of General William Tecumseh Sherman, as Commanding General of the Army. The Army Service Schools comprise a group of affiliated schools for the better preparation of the mobile army for war. These Schools are: the School of the Line, the Army Staff College, the Army Signal School, the Field Engineering School, special courses for field officers and National Guard officers, and a correspondence course for medical officers. The environment of Fort Leavenworth lends itself admirably to the practical work of these schools. The military reservation comprises several thousand acres of diversified terrain, extending along both sides of the Missouri River.

The Army School of the Line is the basic school. Its object is the instruction of specially selected officers from the line and staff corps, in the proper methods employed in the leading and care of troops in time of war and their training in time of peace. All branches of the Service are represented at this school including one or more officers of the Marine Corps and Porto Rican regiment of Infantry, and occasionally officers of foreign countries.

The Army Staff College is made up of those officers who have graduated from the School of the Line with a class standing as high as No. 18.

The Mounted Service School, Fort Riley, Kansas, provides a two years' course of instruction for officers of cavalry and field artillery. Enlisted men's schools are here maintained for farriers, horseshoers, cooks, and bakers.

The School of Fire for the Field Artillery was recently established at Fort Sill, Oklahoma, and embodies the best ideas in field artillery training and fire control of European armies, being the result of attendance of some of our officers at artillery schools abroad.

A School of Musketry, primarily for Infantry troops, is also maintained at Fort Sill.

The Army War College at Washington Barracks, D. C., was established in 1901. It is presided over by Brigadier General Montgomery M. McComb, General Staff Corps, with Lieut. Colonel Andrew Moses, C. A. C., General Staff Corps, as Secretary. The magnificent college building was erected at a cost of $700,000 in 1907. The purpose of the War College is to make a practicable application of knowledge already acquired. The objects are:

(*a*) The direction and coördination of military education in the Army and civil schools and colleges at which officers of the Army are detailed and the extension of opportunities for investigation and study in the militia of the United States.

(*b*) To provide facilities for and to promote advanced studies of military subjects and to formulate the opinion of the College body on the subjects studied for the information of the Chief of Staff.

The War College is the clearing house of military information. To it is referred the reports of all military attachés and data relating in any way to military establishments and policy, and the art and strategy of war.

The student officers of the War College are selected from officers above the rank of Captain having more than twenty years service.

Major General Wm. H. Carter, in his book, "The American Army," thus summarizes our system of military education: "The educational scheme contemplates that beginning his career in the garrison school every officer shall be required to fit himself thoroughly for the responsible duties of his grade, including familiarity with company and post administration and that of the staff and supply service. Those officers who exhibit the most aptitude in the garrison schools are regarded as having a right to precedence when selections from their grade are made for attendance at the Army School of the Line. Similarly selections are here made for the advanced course in the Army Staff College. Eventually the distinguished graduates

of the Staff College, after a tour of service with their regiments, are destined for participation in the course of study at the Army War College, where they will have an opportunity not only to observe the work of the General Staff in connection with war plans, but also to participate in similar studies. In this way it is expected that the nation will eventually have at its disposal a highly trained body of officers whose qualifications are a matter of official record based upon progressive work."

"We demand adequate national defense, adequate protection on both our Western and Eastern coasts. We demand thoroughness and efficiency in both arms of the service. It seems to be plain that our Regular Army is too small. We are too great a country to require of our citizens who are engaged in peaceful vocation the sort of military service to which they are now called. As well insist that our citizens in this metropolis be summoned to put out fires and police the streets. We do not count it inconsistent with our liberties, or with our democratic ideals, to have an adequate police force. With a population of nearly one hundred millions we need to be surer of ourselves than to become alarmed at the prospect of having a Regular Army which can reasonably protect our border, and perform such other military service as may be required, in the absence of a grave emergency. I believe further, that there should be not only a reasonable increase in the Regular Army, but that the first citizen reserve subject to call should be enlisted as a Federal Army and trained under Federal authority."

—From Mr. Hughes's Speech of Acceptance.

New arrivals at West Point

Fifteen minutes later

Summer camp

Battalion parade, U. S. M. A.

"The simple life" at West Point

Building barrel raft. Outdoor class in engineering

See p. 311.

CHAPTER XXI

THE UNITED STATES MILITARY ACADEMY

THE United States Military Academy was founded by Act of Congress March 16, 1802. General Washington died without having realized his cherished ambition of seeing such a school established. Two days before his death he wrote Alexander Hamilton on this subject as follows:

"The establishment of an institution of this kind, upon a respectable and extensive basis, has ever been considered by me as an object of primary importance to this country; and while I was in the Chair of Government, I omitted no proper opportunity of recommending it, in my public speeches and other ways, to the attention of the Legislature."

The Military Academy has long since attained a proficiency in military art and science, and general efficiency, as to establish the reputation of being the most advanced military college in the world. To graduate from it is one of the highest distinctions Young America can attain. It and the United States Naval Academy are the most democratic institutions in the world. There the sons of the rich and poor are on absolutely equal terms. There is no class distinction, no religious discrimination, no favoritism of any kind.

The West Point Military reservation of several hundred acres is situated on a high bluff on the west bank of the Hudson River fifty miles north of New York City. A great bend in the river at this point adds to the picturesqueness and grandeur

of the scenic beauty. The Government in recent years has been very liberal in providing many massive stone buildings of imposing architectural design. The Military Academy is the basis of our military educational system. It develops to an extreme degree self-reliance, self-restraint, manliness, independence, neatness, etiquette, culture, and refinement; respect for law and order and fellow man, discipline, courage, and forbearance—a composite type of American citizen and soldier, the personification of democracy.

The U. S. M. A. is a school for the practical and theoretical training of cadets for the military service. Upon the satisfactory completion of its course, cadets are eligible for promotion and commission as Second Lieutenants in any arm of corps of the Army, the branch of service being somewhat dependent upon class standing, the vacancies in the Engineer Corps being tendered to the honor men of each class.

The Chief of Staff is charged with the supervision of matters in the War Department pertaining to the Academy. The immediate control is vested in the Superintendent and the academic board composed of the heads of the various Departments, the Commandant of Cadets, the Adjutant, and the Quartermaster. West Point has been occupied continuously as a military post since January 20, 1778. The earliest proposal for a military school for the United States was that of Brigadier General Henry Knox, Chief of Artillery (May, 1776). His plans were seconded by Colonel Alexander Hamilton and approved by General Washington.

On October 1, 1776 the Colonial Congress passed a resolution appointing a committee to prepare a plan for "A Military Academy at the Army." The result was the resolution of June 20, 1777, providing for a corps of Invalids "to serve as a military school for young gentlemen previous to their being appointed to marching regiments." The Invalid Corps was organized in July, 1777. In 1781, at the request of Washington, it was marched to form part of the garrison at West Point, where an

engineer school, a laboratory, and a library had already been established in three separate buildings.

In 1779, the Board of War adopted regulations for the Corps of Engineers and for the Sappers and Miners. These were promulgated in orders by General Washington. The plan contemplated lectures by engineer officers, on fortification, mining, reconnoissance, encampments and the like. Practical experiments in gunnery were conducted at West Point as early as February, 1780. In 1783, after the cessation of hostilities, Washington, having been called upon for his views as to the peace establishment, laid the matter of a Military Academy before his officers at Newburgh. He referred to it again in his message on December 3, 1793. The law of May 9, 1794, authorized the organization of a Corps of Artillerists and Engineers with two cadets to a company, thus creating the new grade of "cadet" in the American Army. A school for the Artillerists and Engineers, and for the cadets attached to the Corps was established, on the recommendation of Washington, at West Point in 1794. The destruction of its buildings by fire in 1796 caused a suspension. In July, 1801, the Secretary of War directed that all the cadets of the Corps of Artillerists should report at West Point for instruction, and in September a school was opened with four Army officers and a civilian as administrators and instructors.

An Act of Congress approved March 16, 1802, authorized the President to organize and establish a Corps of Engineers to consist of five officers and ten cadets and provided that it should be stationed at West Point, in the State of New York, and should constitute a Military Academy. The Academy with ten cadets present was formally opened July 4.

Acts of Congress, in 1802 and 1808, authorized forty cadets from the Artillery, 100 from the Infantry, 16 from the Dragoons and 20 from the Riflemen; few of these were appointed, and no provision was made for them at the Academy. In 1810 the Academy was deprived of nearly all means of instruction, and

officers and cadets had difficulty in obtaining their pay. During most of the year 1811 and a part of 1812, although war was imminent, academic instruction was practically abandoned. In March, 1812, the Academy was without a single instructor. Up to and including this time, 88 cadets had been graduated; they entered without mental or physical examination, at all ages from 12 to 34, and at various times during the year.

The Military Academy was reorganized in 1812, under the general principles upon which it has since been conducted. The mental requisites and the age limit were then first prescribed.

In 1817, under the able superintendency of Major Sylvanus Thayer, C. E., the present era in the Academy's history opened. Until 1843, a prescribed residence was not a legal qualification for appointment, but the selection of one cadet from each congressional district had become the custom. In that year the custom became the law.

By an Act of Congress, in May, 1916, the Corps of Cadets is to be increased to 1,332 in four annual increments. This Act provides that the Corps of Cadets at the United States Military Academy shall hereafter consist of two for each congressional district and territory, four from the District of Columbia, two natives of Porto Rico, four from each state at large, and eighty from the United States at large, twenty of whom shall be selected from among the honor graduates of educational institutions having officers of the Regular Army detailed as professors of military science and tactics, and which institutions are designed as "honor schools," upon the determination of their relative standing at the last preceding annual inspection made by the War Department. They shall be appointed by the President and shall, with the exception of the eighty appointed from the United States at large, be actual residents of the congressional district, or of the District of Columbia, or of the island of Porto Rico, or of the states, respectively, from which they purport to be appointed. The President is authorized to ap-

point cadets from among enlisted men of the Regular Army and National Guard between the ages of nineteen and twenty-one years who have served not less than one year, provided that the total number so selected shall not exceed 180 at any one time.

The appointment from a congressional district or territory, is made upon the recommendation of its representative or delegate in Congress and those from a state at large by the U. S. senators.

The Secretary of War is authorized to permit not to exceed four Filipinos, one for each class, to be designated by the Philippine Commission.

Appointments to West Point are required by law to be made one year in advance of the date of admission, except in cases where, by reason of death or other cause, a vacancy occurs which cannot be provided for by such appointment in advance. These vacancies are filled in time for the next examination.

For each vacancy three candidates should be nominated, one of the candidates to be named as principal and the others as alternates. The alternate making the highest proficient average will be entitled to admission in case of the failure of the principal. Each candidate will receive from the War Department a letter of appointment, and he must appear for examination at the time and place designated.

On the last Tuesday of March of each year candidates selected for appointment appear for mental and physical examination before Boards of Army officers to be convened at such places designated by the War Department. Candidates who pass are admitted to the Academy without further examination upon reporting in person to the Superintendent before 12 o'clock noon on the 14th of June following the examination.

Each candidate before admission to the Academy must show by examination that he is well versed in algebra, to include quadratic equations and progressions, plane geometry, English grammar, composition and literature, descriptive and physical geography, general and United States history.

No rejected candidate shall be re-examined, except upon recommendation of the Academic Board.

Immediately after reporting to the Superintendent for admission and before receiving their warrants of appointment, candidates are required to sign engagements for service in the United States Army for eight years from the date of admission as a candidate, unless "sooner discharged by competent authority." Each cadet subscribes to an oath of allegiance in the following form: "I . . . do solemnly swear that I will support the Constitution of the United States, and bear true allegiance to the National Government; that I will maintain and defend the sovereignty of the United States paramount to any and all allegiance, sovereignty or fealty I may owe to any state, county, or country whatsoever, and that I will at all times obey the legal orders of my superior officers and the rules and articles governing the Armies of the United States."

No candidate shall be admitted who is under seventeen or over twenty-two years of age (19–21 if an enlisted man of the Army of National Guard), or less than five feet four inches in height at the age of eighteen and upward.

Each candidate designated as principal or alternate should ascertain as soon as practicable whether or not he has any physical defect that would disqualify him or any that should be corrected by treatment. For this purpose he should immediately cause himself to be examined by his family physician, and, if he desires, by an Army surgeon at the nearest military post. Such examination should enable the candidate to decide whether or not to devote the time and possible expense necessary for preparation for the entrance examination. The informal examination recommended is solely for the convenience and benefit of the candidate himself, and can in no manner affect the decision of the Academic and Medical Examining Boards.

Upon the completion of the mental examination, all candidates will be thoroughly examined physically by the medical officers

Indoor class in engineering

Physical culture

University of Minnesota battery of field artillery, 1916, part of National Guard and Cadet Corps

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Cornell University cadets on campus for annual inspection, May 5, 1916

Cadet Corps, University of California

of the Board, under the following instructions prepared by the Surgeon General of the Army:

Hearing must be normal in both ears.

Vision, as determined by official test types, must not fall below 20-40 in either eye, and not below 20-20 unless the defect is a simple refractive error not hyperopia, is not due to ocular disease, and is entirely corrected by proper glasses.

In the record of all examinations the acuity of vision without glasses, and also with glasses when the acuity is less than 20-20 will be given for each eye separately; in the latter case, the correction will also be noted.

Hyperopia requiring any spherical correction, animosmetropia, squint or muscular insufficiency, if marked, are causes for rejection.

Color blindness, red, green or violet, is cause for rejection.

Teeth—a candidate must have at least four serviceable double (bicuspid or molar) teeth, two above and two below, and so opposed as to serve the purpose of mastication. Loss of many teeth or teeth generally unsound is also cause for rejection. In the latter case, however, a candidate may be accepted subject to the condition of having cavities filled and mouth put in good sanitary condition by the date set for his arrival at West Point.

The following are causes for disqualification if found to exist to such a degree as would immediately or at no very distant period impair the efficiency of the candidate:

1. Feeble constitution; unsound health from whatever cause; indications of former disease, glanular swellings or other symptoms of scrofula.
2. Chronic cutaneous affections, especially of the scalp.
3. Severe injuries of the bones of the head; convulsions.
4. Impaired vision, from whatever cause; inflammatory affections of the eyelids; immobility or irregularity of the iris; fistula lachrymalis, etc.
5. Deafness; copious discharge from the ears.
6. Impediment of speech.

7. Want of due capacity of the chest, and any other indication of liability to a pulmonic disease.

8. Impaired or inadequate efficiency of one or both of the superior extremities on account of fractures, especially of the clavicle contraction of a joint, deformity, etc.

9. An unusual excurvature or incurvature of the spine.

10. Hernia.

11. A varicose state of the veins.

12. Impaired or inadequate efficiency of one or both of the inferior extremities on account of varicose veins, fractures, malformation (flat feet, etc.), lameness, contraction, unequal length, bunions, overlying or supernumerary toes, etc.

13. Ulcers, unsound cicatrices of ulcers likely to break out afresh. Students who are regularly enrolled at an educational institution accredited by the Military Academy are exempt from mental examination under certain conditions.

All cadets are examined physically in May of each year. Those found disqualified to continue with the course are discharged.

Academic duties are suspended from the completion of the June examination until the end of August. During this period cadets live in camp and are engaged in military duties and exercises and in receiving practical military instruction. Acaddemic duties are also suspended from December 24th until January 2nd, except for those undergoing examination. All duties and exercises, as far as practicable, are suspended on national and legal holidays.

Cadets of the first, second, and third classes not undergoing examination are allowed short leaves at Christmas, if their conduct during the preceding six months has been satisfactory. Excepting these short leaves for good conduct, cadets are allowed but one leave of absence during the four years' course. This leave is granted to those cadets who have successfully completed the third class course of study and extends from the middle of June to the 28th of August.

The pay of a cadet is $600 per year and one ration per day, or commutation therefore at thirty cents per day. The actual and necessary traveling expenses of candidates from their homes to the Military Academy are credited to their accounts after their admission as cadets.

No cadet is permitted to receive money, or any other supplies from his parents, or from any person whomsoever, without the sanction of the Superintendent. A most rigid observance of this regulation is urged upon all parents and guardians, as its violations would make distinctions between cadets which it is the especial desire to avoid; the pay of a cadet is sufficient with proper economy, for his support.

Cadets are required to wear the prescribed uniform. All articles of their uniform are of a designated pattern, and are sold at regulated prices.

Immediately after admission candidates must be provided with an outfit of uniform, etc., the cost of which is about $160. This sum, or at least $100 thereof, must be deposited with the treasurer of the Academy before the candidate is admitted. Upon graduation a cadet who has exercised proper economy will have sufficient money to his credit with the treasurer of the Academy, to purchase his uniform and equipment as an officer.

Cadets and officers have free access to the library, which comprises over 90,000 books, maps, and manuscripts. The collection contains substantially all standard books on the subjects taught in the Academy and is especially complete in military subjects.

During the summer encampment cadets partake of camp life, marches, battle exercises, advance guard and rear, scouting,

outpost duty, etc. This affords a welcome change from the nine and one-half months of constant routine of hard study and drill from 6 A. M. to 10 P. M. daily. This summer camp forms a most important and practical part of military education and training. The camp site, camp arrangement, and sanitation is practically perfect and a model. All police work at camp is done by cadets.

This camp training is especially valuable to the Senior or First Class who are soon to graduate and take up their profession as junior officers in the Army. This class is also taken to one of the Coast Defense Commands for practical work at a seacoast battery, and in submarine mining, including target practice and blowing up of mines.

The men of the first class are given a special course in equitation, including horse training, packing, hippology, stable management and in taking various jumps bareback, with pad and service saddle. About fifty per cent. of these men further improve their seat with polo practice.

The West Point graduate is well versed in horsemanship and the potentialities of the cavalry and artillery mounts.

The Third Year class pay considerable attention while in camp to mounted drill in Field Artillery, with an hour a day in the riding hall acquiring a proper seat and learning something of the control of the horse.

The Fourth classmen have no cavalry drill. The greater part of the practical field work is given as infantrymen. Close and extended order drills become second nature. This accounts for the superior dress parades for which the Cadet Corps is famous. The appearance of the Cadet Corps in Washington at the Inaugural parade has become traditional. During the annual practice march and maneuver period, considerable field and military engineering work is indulged in.

Rifle practice extends throughout the entire course. In order to develop maneuver problems to the highest practical degree, the various detachments stationed at West Point are joined to

the Cadet Corps, thus forming a force of six companies of infantry, two small troops of cavalry, a battery of field artillery and a mountain gun and machine gun detachment, all of which are commanded in turn by members of the First Class. This force is divided into two parts, each commanded by an officer of the Department of Tactics. The officer in command plans the offense or defense, issues the necessary orders, leaving their actual execution to cadets. Each prospective officer is thus afforded opportunity to command each arm of the service and to secure at the same time a comprehensive view of how the different arms work together.

Every effort is made to simulate actual service.

Upon graduation the cadet is possessed of a sound practical and theoretical basis upon which to begin his career as a professional soldier.

Systematic training in athletics and physical culture is conducted daily by Captain Koehler, Master of the Sword. This instruction is compulsory and is given both indoors in the gymnasium and in the open. Instruction in dancing is given to each class.

All forms of outdoor sports are indulged in individually and by class or teams, such as swimming, rowing, golf, tennis, polo, baseball, football, fencing, and field day sports.

Intercollegiate schedules for various games are played at West Point.

The climax of the football season is the annual game between West Point and Annapolis, on the Saturday after Thanksgiving at Franklin Field Philadelphia and the Polo Grounds, New York City, alternately. This event is witnessed by both Corps of Cadets and upward of 40,000 people, including the President, Secretary of War, the Secretary of the Navy, and many prominent officials and dignitaries.

The annual baseball game between the Academies is a midsummer gala occasion.

Cadets who excel in the various sports are awarded permission to wear the traditional "A" upon their sweaters.

The working organization consists of:

Superintendent and Commandant.

Military Staff.

Departments of Instruction.

Corps of Cadets, and

Detachment of troops assigned for duty to that post.

The academic departments arranged in the order in which they were created by law are:

Department of Tactics.

Department of Civil and Military Engineering.

Department of Natural and Experimental Philosophy.

Department of Mathematics.

Department of Chemistry, Minerology, and Geology.

Department of Drawing.

Department of Modern Languages.

Department of Law.

Department of Practical Military Engineering, Military Signaling, and Telegraphy.

Department of Ordnance and Gunnery.

Department of Military Hygiene.

Department of English and History.

For instruction in infantry drill regulations and in military police and discipline, the Corps of Cadets is organized into two battalions, under the Commandant of Cadets, each battalion and company being commanded by an Army officer. The increase authorized by the present Congress became effective July 1, 1916, making necessary the organization of another battalion. The cadet officers and non-commissioned officers are selected from those cadets who have been most studious, soldier-like in the performance of their duties, and most exemplary in their general deportment.

Cadets during the first year's course constitute the fourth class, commonly called "Plebes"; those on the second year's

course, the third class; those on the third year's course the second class; and those of the fourth year's course, the first class.

The academic year commences the first of July. On or before that date the result of the examination held in the preceding month is announced and cadets are advanced from one class to another.

Graduation week is the second week of June. All exercises are conducted in accordance with the wishes of the Board of Visitors which is in session during this period. The graduation class after receiving their diplomas are granted three months' leave of absence as Second Lieutenants on full pay and report for duty with their regiments or organizations Sept. 15th following.

Graduation week is also the occasion for many class reunions and a series of athletic competitions and sports.

The one-hundredth night ball given 100 nights previous to graduation day is the greatest winter social event.

The total number of graduates of the Military Academy, including the Class of 1916, is 5,601.

In the belief that the state of Justice and Peace among nations can be maintained only when the preponderance of military power has been gathered into the hands of the pacific peoples, and that until such a transfer of the balance of military power has been effected the safety of no nation is assured, the National Society for the Advancement of Patriotic Education has been formed for the purpose of promoting the translation of the patriotic impulses of our people into an effective national spirit, in order that a united and strengthened America shall emerge which, by its preponderant power acting upon the side of peace, shall discourage aggression and insure the stability of the world.—Creed of the Patriotic Instruction Society.

CHAPTER XXII

MILITARY INSTRUCTION IN CIVIL INSTITUTIONS

THE assistance given to state and private institutions of learning by the Government in the nature of allotment of Federal land and funds, the loan of ordnance, and the detail of Army officers as professors of military science and tactics is governed by statutes enacted in 1862, 1888, 1891, 1893, 1904 1909, and 1916.

The need of general military education at the outbreak of the Civil War was emphasized so forcibly through the lack of trained officers and men, that Congress, July 2, 1862, passed a measure advocated by Representative Morrill, of Vermont, donating grants of land to each state which would include military tactics in the curriculum of its Agricultural and Mechanical Colleges. Subsequent Acts authorized the loan of arms and equipment, the donation of Federal funds based upon enrollment, and the detail of officers as instructors. At present 100 officers from the active list and an unlimited number from the retired list may be detailed to land-grant colleges and private institutions of learning. Forty-eight officers are detailed, one for each state, under the Morrill Act and fifty-two are detailed by population to colleges wherein courses in military science and tactics are taught.

These institutions will play an important part in supplying candidates to fill the vacancies as Second Lieutenants during the next five years.

The following classifications are based upon the reports of the General Staff officers who inspect these institutions annually in April and May.

EDUCATIONAL INSTITUTIONS AT WHICH OFFICERS OF THE ARMY ARE DETAILED AS PROFESSORS OF MILITARY SCIENCE AND TACTICS.

State.	Name of Institution.	Class.
Arizona	University of Arizona, Tucson	C
Arkansas	Ouachita College, Arkadelphia	C
	University of Arkansas, Fayetteville	C
California	*University of California, Berkeley (1914, 1915, 1916)	C
Colorado	State Agricultural College of Colorado, Fort Collins	C
Connecticut	Connecticut Agricultural College, Storrs	C
Delaware	Delaware College, Newark	C
Florida	University of Florida, Gainesville	C
Georgia	Georgia Military College, Milledgeville	C
	North Georgia Agricultural College, Dahlonega	MC
	University of Georgia, Athens	C
Hawaii	The Kamehameha Schools, Honolulu	C
Idaho	University of Idaho, Moscow	C
Illinois	*University of Illinois, Urbana (1914, 1915, 1916)	C
Indiana	Concordia College, Fort Wayne	C
	University of Notre Dame, Notre Dame	C
	Purdue University, La Fayette	C
Iowa	State University of Iowa, Iowa City	C
	Iowa State College of Agriculture and Mechanic Arts, Ames.	C
Kansas	*Kansas State Agricultural College, Manhattan (1914, 1915, 1916)	C
Kentucky	State University, Lexington	C
Louisiana	Louisiana State University and Agricultural and Mechanical College, Baton Rouge.	C
Maine	University of Maine, Orono	C
Maryland	*St. John's College, Annapolis (1905, 1909, 1910, 1915, 1916)	MC
	Maryland Agricultural College, College Park	MC
Massachusetts	Massachusetts Agricultural College, Amherst	C
	Massachusetts Institute of Technology, Boston	C
Michigan	Michigan Agricultural College, Lansing	C
Minnesota	*University of Minnesota, Minneapolis (1914, 1915, 1916)	C
Mississippi	Mississippi Agricultural and Mechanical College, Agricultural College.	MC
Missouri	*University of Missouri, Columbia (1914, 1915, 1916)	C
Montana	Montana College of Agriculture and Mechanic Arts, Bozeman	C
Nebraska	University of Nebraska, Lincoln	C
Nevada	University of Nevada, Reno	C
New Hampshire	New Hampshire College of Agriculture and the Mechanic Arts, Durham.	C
New Jersey	Rutgers Scientific School, New Brunswick	C
New Mexico	New Mexico College of Agriculture and Mechanic Arts, State College.	C
New York	*Cornell University, Ithaca (1914, 1915)	C
North Carolina	North Carolina College of Agriculture and Mechanic Arts, West Raleigh.	C
North Dakota	North Dakota Agricultural College, Agricultural College	C
Ohio	*Ohio State University, Columbus (1916)	C
	Ohio Northern University, Ada	C
	Wilberforce University, Wilberforce	C
Oklahoma	Oklahoma Agricultural College, Stillwater	C
Oregon	Oregon Agricultural College, Corvallis	C
Pennsylvania	Pennsylvania Military College, Chester	MC
	Pennsylvania State College, State College	C
Porto Rico	University of Porto Rico, San Juan	C
Rhode Island	Rhode Island State College, Kingston	C
South Carolina	*The Citadel, Charleston (1904, 1905, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916).	MC
	Clemson Agricultural College, Clemson College	MC
South Dakota	South Dakota State College of Agriculture and Mechanic Arts, Brookings.	MC
Tennessee	University of Tennessee, Knoxville	C
Texas	*Agricultural and Mechanical College of Texas, College Station (1910, 1911, 1912, 1913, 1914, 1915, 1916).	MC

EDUCATIONAL INSTITUTIONS—CONTINUED

State.	Name of Institution.	Class.
Utah	Agricultural College of Utah, Logan	C
Vermont	*Norwich University, Northfield (1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916).	MC
	*University of Vermont and State Agricultural College, Burlington (1915, 1916).	C
Virginia	*Virginia Military Institute, Lexington (1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916).	MC
	Virginia Polytechnic Institute, Blacksburg	MC
Washington	*State College of Washington, Pullman (1916)	C
	University of Washington, Seattle	C
West Virginia	West Virginia University, Morgantown	C
Wisconsin	*University of Wisconsin, Madison (1915, 1916)	C
Wyoming	University of Wyoming, Laramie	C

MILITARY SCHOOLS

State.	Name of Institution.	Class.
Alabama	Marion Institute, Marion	.....
California	The Harvard School, Los Angeles	M
	The San Diego Army and Navy Academy, Pacific Beach	SM
	Hitchcock Military Academy, San Rafael	M
	Mount Tamalpais Military Academy, San Rafael	M
Georgia	Marist College, Atlanta	SM
	Gordon Institute, Barnesville	SM
	Georgia Military Academy, College Park	M
	Riverside Military Academy, Gainesville	M
Illinois	*Western Military Academy, Alton (1914, 1915, 1916)	M
Indiana	*Culver Military Academy, Culver (1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916).	M
Kentucky	*Kentucky Military Institute, Lyndon (1914, 1915, 1916)	M
Minnesota	*College of St. Thomas, St. Paul (1908, 1909, 1915, 1916)	M
	*Shattuck School, Faribault (1904, 1906, 1907, 1908, 1909, 1912, 1913, 1914, 1915).	M
Missouri	*Wentworth Military Academy, Lexington (1914, 1915, 1916)	M
	*Kemper Military School, Boonville (1914, 1915, 1916)	M
Nebraska	Agricultural School of the University of Nebraska, Lincoln, Nebr.	M
New Mexico	*New Mexico Military Institute, Roswell (1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916).	M
New York	Xavier High School, New York City	SM
	*St. John's School, Manlius (1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916).	M
	*New York Military Academy, Cornwall on Hudson (1914, 1915, 1916).	M
North Carolina	Bingham School, Asheville	M
South Carolina	Bailey Military Institute, Greenwood	M
Tennessee	Columbia Military Academy, Columbia	M
	Tennessee Military Institute, Sweetwater	M
	Sewanee Military Academy, Sewanee	M
	Castle Heights School, Lebanon	.....
Texas	West Texas Military Academy, San Antonio	M
Virginia	Fork Union Military Academy, Fork Union	SM
	Staunton Military Academy, Staunton	M
Wisconsin	Northwestern Military and Naval Academy, Lake Geneva	M
	*St. John's Military Academy, Delafield (1911, 1912, 1913, 1914, 1915, 1916).	M

MILITARY ACADEMIES AT WHICH OFFICERS ARE DETAILED UNDER SECTION 1260, R. S., AND THE ACTS OF CONGRESS APPROVED MAY 4, 1880: AUG. 6, 1894; FEB. 26, 1901; AND APR. 21, 1904.

State.	Name of Institution.	Class.
Florida	Florida Military Academy, Jacksonville	SM
Illinois	The Morgan Park Academy, Morgan Park	SM
Missouri	Missouri Military Academy, Mexico	M
New Jersey	Wenonah Military Academy, Wenonah	SM
Ohio	Miami Military Institute, Germantown	M
Virginia	Blackstone Military Academy, Blackstone	SM

CLASS MC.—Colleges and universities (including land-grant institutions) where the curriculum is sufficiently advanced to carry with it a degree, where the students are habitually in uniform, where the average age of the students on graduation is not less than 21 years, where military discipline is constantly maintained, and where one of the leading objects is the development of the student by means of military drill and by regulating his daily conduct according to the principles of military discipline.

CLASS M.—Essentially military institutions where the curriculum is not sufficiently advanced to carry with it a degree or where the average age of the students on graduation is less than 21 years.

CLASS C.—Colleges and universities (including land-grant institutions) not essentially military where the curriculum is sufficiently advanced to carry with it a degree and where the average age of the students on graduation is not less than 21 years.

CLASS S M.—Institutions not included in any of the classes mentioned above.

"Institutions whose students have exhibited the greatest application and proficiency in military training and knowledge during the academic year are designated annually as "distinguished colleges, and honor schools." An asterisk against the name of an institution indicates that it is one of those institutions that are now so designated, the year or years in which it has been so designated being placed after the name of the institution.

The President is authorized to appoint each year twenty students from the distinguished and honor colleges as cadets at the United States Military Academy. He is also authorized to give preference to an "honor" graduate of each distinguished college for appointment as Second Lieutenant in the Army, to fill existing vacancies July 1st. An "honor" graduate is one whose attainments in scholarship have been so marked as to merit the approbation of the Professor of Military Science and Tactics and the President of the College.

The minimum enrollment is 100 for class MC and M, and 150 for class C and SM.

The main object is to qualify students to be company officers of Infantry, Volunteers, or Militia. The courses of instruction are both practical and theoretical. Three hours per week or an equivalent of 84 one-hour periods per year for two years, with not less than two-thirds of the total time being devoted to practical instruction and field training, is required.

Students are organized into companies, battalions, and regiments of infantry, known as cadet corps. Batteries of artillery and troops of cavalry are permitted at certain institutions by special authority of the War Department. Military bands are also maintained. Upon occasions of military ceremony, drills, guard duty, and other military instruction, students are required to appear in the uniform prescribed by the institution.

"Yes; in spite of the coming of the Christ, and of all the myriad forces for good, man is still a fighting animal. Notwithstanding our advanced civilisation, he yet kills and maims and robs and plunders. This has been his nature from the beginning, and this it is likely to be for long, long ages to come. In the primordial forests he wrestled with his savage brother, hand to hand, for self and family; a little later he gave heroic battle for his clan; and now he fights collectively for his nation. And the nation is only an elaboration of individuals. It has the same passions, noble and ignoble, as the individuals of which it is composed. In our efforts to determine what we need, we should accept the teachings of history as they are and not as we would have them. True, man's nature does change, and it changes for the better, but it is only by slow, painful, and imperceptible degrees, such as the Psalmist had in mind when he said, 'A thousand years in the sight of the Lord are but as yesterday when it is past and as a watch in the night.'"—From speech made by Honorable James J. Britt, of North Carolina, in the House of Representatives, December 17, 1915.

CHAPTER XXIII

MILITARY CAMPS OF INSTRUCTION

Major General Leonard Wood has become the leading exponent of training camps for students and business men, and in advocating universal military and naval training in youth. In the spring of 1913 at his recommendation and with the approval of the Secretary of War two training camps, one at Gettysburg, Pa., and one at Monterey, Cal., were organized for the benefit of college students who were desirous of thus spending their summer vacation. This was a long stroke in the direction of a campaign of military education and enlightenment destined to open the eyes of an indifferent Congress to our military unpreparedness and lack of a national defense policy.

The aid and support given by the presidents of colleges and universities have been invaluable. At these camps ninety colleges were represented by one or more students each, and their experience and military training produced a most salutary effect in awakening a sense of responsibility and culpability for the conditions of our military unpreparedness. This sentiment crystallized in New York City, November 19, 1913, at an assembly of college presidents and camp students by the organization of the "Society of the National Reserve Corps." Princeton, Harvard, Yale, Michigan University, Virginia Military Institute, University of Illinois, University of Alabama, Lehigh University, California University, and other prominent institutions were represented by their presidents. These eminent educators heartily approved of this innovation of the War Department and believe that the student camps of military instruction will become very popular and a strong and permanent

feature for military advancement of the country. There were four such camps in 1916.

The Society's constitution is a clear-cut, business-like exposition of the military obligations of citizenship.

CONSTITUTION SOCIETY OF THE NATIONAL RESERVE CORPS

I.—1. Being convinced of the physical benefit to be derived from living a part of the year in the strenuous, healthful, open air life of a military camp, particularly to students, whose pursuits have kept them indoors and leading a comparatively inactive life for considerable periods, and the knowledge gained of marching, camping, care of the person and camp sanitation with minimum expense; and,

2. Desiring to increase the economic value and business efficiency of our young men by giving them an opportunity to study the principles of command, organization and administration, and experience of value of discipline obtaining in the modern armies; and,

3. Realizing that wars between nations are liable to occur now, or in the future, even as they have in the past; and,

4. That, notwithstanding our best efforts to preserve peace with right and honor, our own country may become involved in a war, either of defense against attack, or of offense against any nation that may violate the rights secured us under the Constitution, laws and treaties of the United States; and,

5. Knowing the above and firmly believing that our present state of preparation and means of meeting such an emergency are inadequate and will lead either to disaster or to useless waste of men, material and money; and,

6. Further knowing that the above state of affairs should be remedied and realizing that it is each man's duty to his country to do his own proper share to effect such a remedy;

7. We, the undersigned young men of America, do hereby form and organize the Society of the National Reserve Corps

of the United States, and do hereby pledge ourselves, individually and collectively, from purely patriotic motives, to do our utmost without hope of reward and without fear or favor to further the objects of said Corps and work for its principles as set forth below.

II.—The objects of the Society of the National Reserve Corps will be (a) to perpetuate the system of students' military-instruction camps and to encourage a large attendance; (b) to encourage thorough knowledge through the country of (1) military policy, (2) military history and (3) military organization; and to have these objects included in the curriculum of the various colleges; (c) to individually train ourselves to the best of our ability to be fitted to serve with best effect in case of need, in such capacity as our condition at that time may properly permit; (d) to establish and support a sound national military policy which shall include the maintenance of a highly efficient Regular Army sufficient for the peace needs of the Nation and a well organized and efficient militia, each supported by adequate reserves.

III.—Eligible for membership, Class A: these men who have attended one or more students' military-instruction camps as organized by the War Department. Class B: all other citizens of the United States in good standing, subject to rules and by-laws of the Society.

The success of the 1913 students' camps prompted the renewal of the invitation for 1914. The response was so favorably received as to justify the organization of four camps geographically distributed over the United States.

Dr. Henry Sturgis Drinker, President of Lehigh University, thus wrote to the Secretary of War relative to his personal visit at a student camp of instruction in 1913:

"When in May last I received the letter sent out by General Leonard Wood, Chief of Staff of the United States Army, to the Presidents of our American Universities and Colleges, stating

that the Secretary of War had decided to hold during the following summer two experimental camps of instruction for students of such institutions, I received the word with hearty appreciation of the immense good to our young men likely to result from such an establishment. Of all things that the American youth of to-day needs, and needs most, is the advantage resulting from an experience of rigorous self-imposed discipline, as the young men joining these camps would go of their own notion. Among young men there are especially two classes to whom such an experience would be most valuable—those coming from well-to-do indulgent parents and those who, lacking parental control, have developed an independence of action not consistent in all respects with the proper conventions of society and life. Nothing could be better for these men or for any others of our youth, than to be thrown together in a body for a time under the careful supervision of the splendid men to whom have been delegated the care and supervision of our boys in these camps—officers of the army, devoted to the service of their country, gentlemen of high ideals, thorough training, and intensely and patriotically interested in the work. It is an enormous error to consider or look on these camps as training schools simply to develop a measure of military efficiency. No man has better expressed the great value of systematic military training than Price Collier in his 'Germany and the Germans,' where he gives the German system credit for far more in the national advancement than mere military preparedness. As he well says, 'one can understand that Germany has little patience with the confused thinking which maintains that military training only makes soldiers and only incites to martial ambitions; when, on the contrary, she sees that it makes youths better and stronger citizens, and produces that self-respect, self-control and cosmopolitan sympathy which more than aught else lessen the chance of conflict.' Soldiers and sailors train themselves and train others first of all to self-control, not to war. It is a pity that a compulsory service has come to mean merely

A. & M. College cadets. Texas University, Bryan, Texas

Staff officers, St. John's College, Annapolis, Md.

Western Military Academy, Alton, Illinois

Battalion of cadets, Culver Military Academy, Culver, Ind.

training to fight. In Germany, at any rate, it means far more than that. Two generations of Germans have been taught to take care of themselves physically without drawing a sword. It is rather a puzzling commentary upon the growth of democracy, that in America and England, where most has been conceded to the majority, there is least inclination on their part to accept the necessary personal burden of keeping themselves fit, not necessarily for war but for peace, by accepting universal and compulsory training.

"Physical training, compulsory on all students in all classes, properly supervised by competent directors of physical education, is becoming the rule in our colleges for men and women, and we all recognize the immense advance that has been made in this respect in the development of healthy, strong-lunged and strong-hearted youths and maidens, but the accentuation of physical training with a measure of military discipline and provision is a further great step in advance.

"I have had the pleasure of visiting the instruction camp at Gettysburg and again the second camp for target practice at Mount Gretna to which the boys marched from Gettysburg, camping by the way and learning practically how to take care of themselves by day and by night while living in the open air. My interest in these visits was, of course, intensified by my desire to see our delegation of Lehigh students at the Camps and the fact that one of my own sons was there with my hearty approval and encouragement made the visits especially interesting to me personally. I could see nothing to criticize and everything to commend and admire. The camp arrangements, medical care, camp hospital, shower baths, living tents, were perfect and the food was excellent, all at small cost. The boys were carefully instructed in the principles of camp sanitation and the proper caring for and disposal of excreta and of waste from the kitchen; this is information of the highest importance and is information that the average citizen never gets; the want of it has cost many precious lives not only in our civil and

Spanish wars but it is felt to-day in our citizen life. I slept on a cot as the boys did in the nights I spent at the camp and ate in their mess tent where the boys and officers met at meals. I was impressed with the cordiality and kindly intercourse between the officers and students and especially with the intense interest shown by the young men in all their exercises.

"Rising at the call of the bugle at five fifteen, they first had open air setting up gymnastics under the leadership of an officer. Then a good breakfast. Then, after a short rest, several hours of instruction in various open air duties, ending with a lecture on some interesting subject from one of the officers in charge. The afternoons and evenings were devoted to voluntary exercises or to sports at the option of the students. So keen were they for voluntary cavalry drill, fencing, broadsword practice, artillery drill, etc., that on one day I was there I heard the Commandant give stringent directions to the officers in charge to lessen the amount of this voluntary work in the afternoon and force the young men to rest and recreation for a change. The camp is in fact a training school for manly men and good citizens with the best of good influences. Regular work in the morning, voluntary engagements, baseball and other recreation in the afternoon and evening, all of it ideally good thorough training with healthful sport interspersed, careful but not oppressive supervision and regulation, absolutely healthful surroundings and good associations. I could think of no six weeks that could be spent by our boys to better advantage to themselves and with better promise to our country of better development of good manly men and gentlemen.

"I found over fifty universities and colleges represented by student delegations, among them most of the leading institutions of the east. The Western institutions, of course, sent their delegations to the other camp, established at the Presidio of Monterey, California, and I saw commendatory notes from the Presidents of many institutions from the leaders of education in our country, a unanimous expression from those best qualified

in our land to form and express an opinion of approval of the training proposed.

"The country owes a great debt of gratitude to the men who devised and put into effect this experiment for the benefit of our youth and it is greatly to be hoped that it may go on and be developed and enlarged to embrace in succeeding years as many of our young men as possible. Our university and college bred youths should develop as a class into leaders of our people; surely in their training nothing can be more valuable than this hard disciplinary experience in obedience and regular clean living and, if with it all, they gain some knowledge of the art of war, a citizen soldiery is not an armed camp and, if the optimistic doctrine of our extreme peace advocates is correct, that if driven to war we can rely on the patriotism and efficiency of our citizens, it may be well that those citizens have at least some appreciation of the rudiments of the duties to which they may be suddenly called. I come of Quaker stock and all my instincts are for peace but I believe that peace will be the more assured to our beloved nation if with prudence we learn to know our strength and to conserve it for our good and the good of the world, rather than rely on the present existence of a millenium that we pray will come in time but that to-day is not with us."

Another gain to the student is a certain increase in his economic value due to the increased business efficiency acquired through habits of discipline, obedience, self-control, order, command, and the study of organization and administration as applied in first-class modern armies.

The benefit of these camps to the Nation is that they foster a patriotic spirit without which a nation soon loses its virility and falls into decay; they spread among the citizens of the country a more thorough knowledge of military history, military policy, and military needs, all necessary to the complete education of a well-equipped citizen in order that he may himself form just and true opinions on military topics.

The student camp idea was extended during the fall of 1915

to include Business Men's Camp of Instruction at Plattsburgh, N. Y.; Fort Sheridan, Illinois; Monterey, California; Tacoma, Washington. The Plattsburg camp was originally planned to accommodate five hundred. The enrollment, however, rapidy rose to thirteen hundred and was there stopped. Over 1,200 business and professional men, artisans and merchants from all parts of the United States, but principally from New England were in attendance.

New York City and Chicago were represented by their respective Mayors and several high officials and distinguished citizens.

The enrollment for the 1916 camps indicate that 30,000 to 40,000 will attend.

Congress by the Act of June 1, 1916 makes it possible to attend such camps at the expense of the Government instead as heretofore at the expense of the individuals.

Not to be outdone by husbands, brothers, or sons the women of America are taking up the military instruction camp idea.

The "National Service School," composed of some 500 young society women, conducted under the direction of the wives of several high officers of the United States Army, Navy, and Marine Corps, opened at Chevy Chase, Md., May 1st, to continue two weeks. President Wilson delivered an address to the students. The uniform prescribed is a khaki coat and skirt, a khaki hat and a soldier's hat. Setting up exercises, class work drill, lectures and a few hours of recreation and entertainment comprised the routine for each day. The principal feature of the instruction is surgical dressing. A course in diet cooking for the invalided and the making of garments for hospital use is also an important feature. The first period was so successful that many remained for a second period of two weeks at which the enrollment was from twelve different states.

A similar camp was held in New York City suburbs during June. Other womens' camps are being planned.

CHAPTER XXIV

THE UNITED STATES NAVY

THE United States Navy from its small beginning in 1775 had reached third place in naval strength of world powers in 1914. Due to the great activity in naval construction abroad since the outbreak of the European War, our Navy has probably dropped to fifth place in 1916.

Its personnel consists of about 2,800 officers and 52,000 enlisted men, not including the Marine Corps. The number and tonnage of serviceable ships of various types built, building, and authorized, August 1, 1916, is as indicated in the following table (as well as a comparative study of the warship tonnage of the various naval powers of the world at the outbreak of the European War which will be found on back of map in pocket of cover).

Our Navy was established in 1775 as a means of protecting the coast from British men-of-war. The original Navy Department officials consisted of a Committee of three, Silas Deane, John Langdon, and Christopher Gadsden. They were called the Marine Committee. In December it was enlarged to include one member from each colony. This Committee made many blunders and mistakes through lack of professional knowledge. Congress then appointed a Committee of three experts to assist the Marine Committee.

A few armed vessels were fitted out and used around Boston to capture British store ships and transports.

The headquarters of the Navy Department was at Philadelphia, the seat of the National Government. In 1781 General Alexander McDougall of New York was appointed Secretary

SUMMARY OF VESSELS FIT FOR SERVICE, INCLUDING THOSE IN COMMISSION OR AUTHORIZED, IN THE UNITED STATES NAVY

Type.	1914		1915		January 1, 1916						Authorized August 1916
					Fit for service, including those under repair.		Under construction		Total		
	Number.	Displacement.	Number.	Displacement.	Number.	Displacement.	Number.	Displacement.	Number.	Displacement.	
		Tons.		*Tons.*		*Tons.*		*Tons.*		*Tons.*	
Battle Cruisers	0		0		0						
Battleships, first line	10	221,650	8	189,650	8	189,650	9	277,800	17	467,450	
Battleships, second line	25	334,146	25	340,146	25	340,146	....	.....	25	340,146	
Armored cruisers	10	140,080	10	140,080	10	140,080	....	.....	10	140,080	
Cruisers, first class	5	46,465	5	46,465	5	46,465	....	.....	5	46,465	
Cruisers, second class	4	25,065	4	25,065	4	25,065	....	.....	4	25,065	
Cruisers, third class	15	48,748	15	48,748	16	50,820	....	.....	16	50,820	
Monitors	9	32,944	9	32,944	7	24,964	....	.....	7	24,964	
Destroyers	50	33,995	53	37,167	41	34,722	17	18,802	58	53,524	
Coast torpedo vessels					16	6,695	....	.....	16	6,695	
Torpedo boats	19	3,365	19	3,365	19	3,365	....	.....	19	3,365	
Submarines	30	9,322	36	12,338	35	11,937	38	21,954	75	[1] 33,891	
Tenders to torpedo vessels	6	19,484	7	20,892	8	31,927	....	.....	8	31,927	
Gunboats	30	27,890	30	27,890	29	26,180	....	.....	29	26,180	
Transports	5	26,595	5	26,595	4	22,235	1	10,000	5	32,235	
Supply ships	4	25,400	4	25,400	4	25,400	1	8500	5	33,900	
Hospital ships	2	9,000	2	9,000	1	5,700	....	.....	1	5,700	
Fuel ships	22	232,401	23	251,581	20	239,430	2	29,000	22	268,430	
Converted yachts	16	9,476	16	9,476	14	8,957	....	.....	14	8,957	
Tugs	45	18,024	45	18,024	48	19,749	2	1,150	50	20,899	
Special type	8	43,333	8	43,333	8	45,904	....	.....	8	45,904	
Unserviceable for war purposes	21	47,501	19	43,976	21	46,291	....	.....	21	46,291	
Total	336	1,354,884	343	1,352,135	343	1,345,682	70	367,206	415	1,712,888	

[1] 10 First Class Battleships, 6 Battle Cruisers, 10 Scout Cruisers, 50 Torpedo Boat Destroyers, 9 Fleet Submarines, 58 Coast Submarines, 1 Submarine, Neff System, 3 Fuel Ships, 1 Repair Ship, 1 Transport, 1 Hospital Ship, 2 Destroyer Tenders, 1 Fleet Submarine Tender, 2 Ammunition Ships, 2 Gunboats.

White undress and blue undress uniform of sailors, U. S. Navy

Chief petty officer
Third enlistment seaman's branch ex-apprentice

Boatswains' mate
First class

Chief petty officer
Second enlistment other than seaman's branch.
White dress

Types of uniforms of enlisted men U. S. Navy

of the Navy under the old Confederacy. Esek Hopkins of Rhode Island was the first Commander-in-Chief of the Continental Navy.

Thirteen frigates of from 13 to 36 guns had been built and used during the Revolution. Two had been destroyed on the Hudson River and three on the Delaware without getting to sea. The remaining eight together with vessels which had been purchased were captured by the British. After the war there seemed to be little use for a Navy and it was neglected. In 1793 depredations by Algerian Corsairs became so alarming that President Washington in a message to Congress stated: "if we desire to avoid insult, we must be able to repel it; if we desire to secure peace one of the most powerful instruments of our prosperity, it must be known that we are at all times ready for war." Congress thereupon appropriated $700,000 for creating a small Navy for the express purpose of stopping Algerian reprisals of our merchant marine.

The exploits of John Paul Jones, a Scottish-American naval adventurer, who came to Virginia in 1773, and who won many naval engagements against the British during the Revolution, and became the guiding genius of the embryo American Navy, have won for him lasting honor and fame notwithstanding he later abandoned the American service and served in the navy of France and, later, that of Russia. His remains now rest in the crypt of the magnificent chapel at Annapolis, having been conveyed there from Paris on an American man-of-war a few years ago.

In 1798 war with France seemed imminent and Congress made provision on land and sea to resist an invasion by France. Fortunately war was averted.

Congress expressly provided that should peace be declared with Algiers the construction of this Navy should cease. After the capture of the *Philadelphia*, our country made a humiliating treaty providing for the payment of tribute to Algiers thus affording another forceful lesson to the American people

as to the folly of unpreparedness. Work was stopped notwithstanding England and France were at war. Washington's advice and counsel were repudiated by Congress evidently on the assumption that the United States was immune from future wars.

No sooner was work on this small Navy stopped than British cruisers stopped our merchant marine and took off seamen on the charge of being British subjects. What was to prevent? France also committed depredations upon American commerce under a decree of 1797 which virtually was a declaration of war. This decree authorized the capture of American vessels under certain conditions and declared that any American found on board a hostile ship though placed there without his consent (by impressment) should be hanged.

Congress became alarmed again and authorized the completion of six frigates previously ordered. One of these, the Constitution (44 guns) which won many victories, is still afloat in Boston Harbor at Portsmouth Navy Yard.

In 1812 when war against Great Britain was declared, our Navy consisted of twenty-one vessels, a totally inadequate Navy with which to cope with England. Six schooners were purchased on Lake Ontario and converted into a merchant marine on the Great Lakes.

The British were building war vessels at Kingston, Ontario, making it absolutely necessary to maintain this squadron on the Great Lakes. Congress also authorized several gun ships and six first-class frigates, six sloops of war and as many ships on the Lakes as the President deemed necessary. Congress also offered to persons who by torpedo or other contrivances should burn, sink, or destroy any British armed vessel, rewards of half of their value in money. Several states passed legislature acts to build warships and donate them to the Government.

You are all familiar with Perry's victory on Lake Erie and his laconic report "we have met the enemy and they are ours, two ships, two brigs, one schooner and one sloop." The Navy

came out of the war with a good record of achievement and reputation for gallantry which will live forever in the annals of American history. Visitors to Annapolis may see Admiral Perry's improvised flag, "Don't give up the Ship" and a British Royal Standard the only one ever captured by any nation, a trophy of the War of 1812.

There are chapters in the history of that war which are carefully left out of the United States histories you and I have studied which, if accurately narrated, would bring the blush of shame to the American cheek.

At the beginning of the Civil War, the Navy had adroitly been placed far beyond the reach of the Government for immediate use. The total number of vessels of all classes belonging to the Navy was ninety, carrying or designed to carry 2,415 guns. Only forty-two ships were in commission. Twenty-eight ships, having, in the aggregate, 874 guns, were lying in ports dismantled. None of them could be made ready for sea in less than several weeks' time and some of them would require at least six months.

The most of them in commission had been sent to distant seas with stores for a squadron there. Such was the utter powerless condition of the Navy to assist in preserving the life of the Republic when Isaac Toucey of Connecticut resigned the office of Secretary of the Navy to Gideon Welles of the same state on March 4, 1861.

Secretary Welles and Assistant Secretary Fox put forth great energy in the creation of a Navy to meet the exigencies of the times. At the beginning of July, four months after President Lincoln's administration came into power, there were forty-three armed vessels engaged in the blockade of the Southern ports and in the defense of the Coast on the eastern side of the continent.

These were divided into the Atlantic and Gulf squadrons. Before the close of 1861, the Secretary purchased and put into commission no less than 137 vessels and had contracted for the

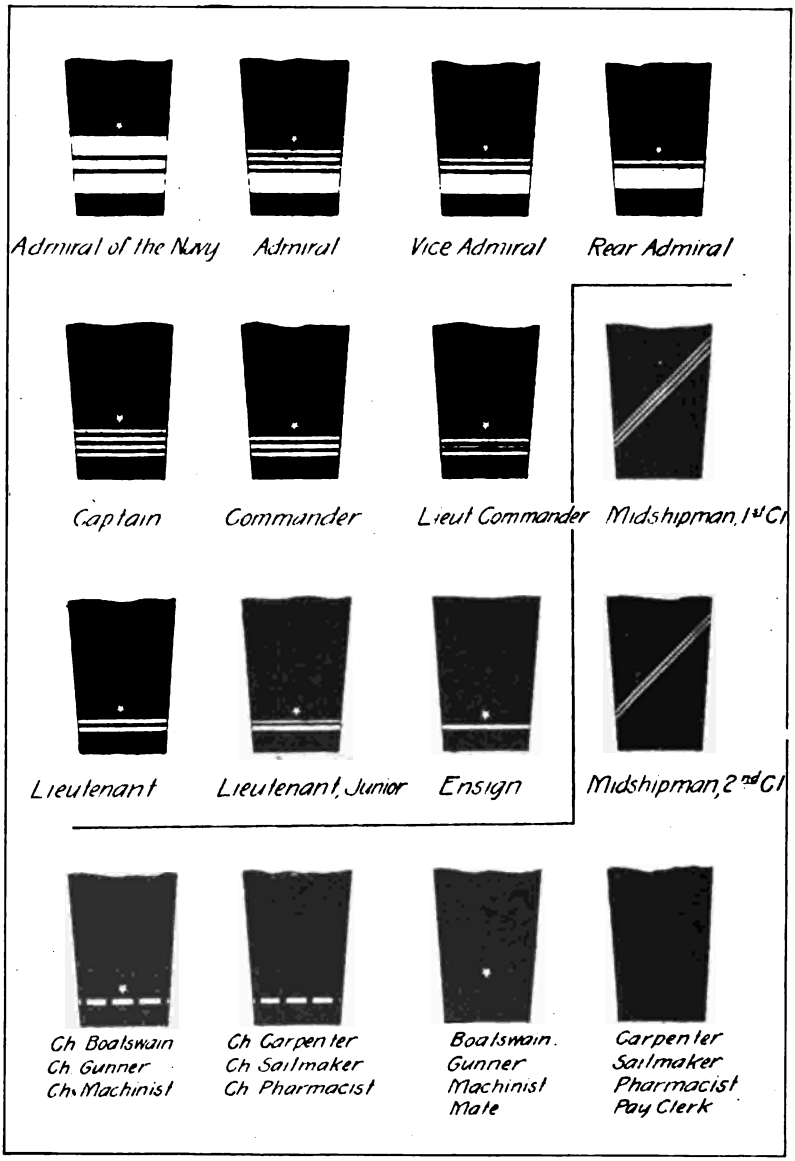
building of a large number of steamships of a substantial class, suitable for performing continuous duty off the Coasts in all weathers. The Secretary recommended the appointment of a competent board to inquire into and report on the subject of iron-clad vessels. Calls for recruits for the Navy were promptly complied with and for the want of men no vessel was ever detained more than two or three days. Since March 1st, 259 officers had resigned or been dismissed, Their places were all soon filled; since many who had retired to civil pursuits came forward and again offered their services to their country and were recommissioned.

The services of the Navy during the Civil War were not appreciated by the people as fully as they deserved. They were often subservient to the Army in its operations near rivers. On the ocean the services of the Navy were chiefly required in blockading ports or in bombarding coast defenses. The Confederates had no Navy proper, only flotillas of gunboats and rams on rivers and in harbors and not a ship on the ocean excepting a few roving piratical vessels depredating upon American commerce.

There were few occasions for purely naval battles. But in the sphere in which the Navy was called upon to act, it performed service of incalculable value and deserves equal honor and gratitude with the Army. The service during the war was more exhausting and really wonderful in operations and results than that of any other Navy in the world. The Navy had been reduced to the smallest proportions during the preceding fifty years of peace and kept in existence only for the protection of the continually expanding commerce of the Republic.

When the Civil War began the Navy numbered only 7,600 enlisted men and 322 officers. Natives of Southern States to the number of 60 resigned their commissions to serve the Confederacy. Yet before an adequate force could be organized and vessels prepared, the blockade of several southern ports was ordered and was maintained. Merchant vessels were converted

Service dress uniform of Lieutenant, Junior Grade, U. S. Navy



Insignia of rank and grade U. S. Navy on sleeve

into warships and volunteers from that service filled the vacant offices.

At the beginning there were 3,844 artisans and laborers, at the end there were 16,880 exclusive of about an equal number employed in private shipyards under contract. During the four years, 208 war vessels were constructed and fitted out and 418 vessels were purchased and converted into warships. Of these, 613 were steamers, the whole costing nearly $19,000,000. At the end of the war the strength of the Navy was 51,500 officers and men and it was unsurpassed by any navy in the world.

PRESENT ORGANIZATION OF THE NAVAL FORCES

The principal naval force of the United States is divided into three active fleets, each under a Commander-in-Chief with rank of Admiral.

The Atlantic Fleet covers the Atlantic Ocean, Mediterranean Sea and tributary waters.

The Pacific Fleet covers North and South America, Hawaii and Samoa.

The Asiatic Fleet covers the western Pacific, the Philippines, Guam, and the Indian oceans.

Vessels on special service in Central American waters and on similar duty are not attached to any fleet, their movements being controlled by the Navy Department direct from Washington.

Special service squadrons are organized from time to time as occasion demands.

STATUS OF SHIPS

Ships of the Navy are divided into two classes, viz: In Commission and Out of Commission. Ships in commission may be in either one of three conditions, as follows:

In Full Commission—when fully officered, manned and ready in all respects for service.

In Commission in Reserve—Ships maintained at some designated navy yard or other suitable place with reduced crews but ready for sea on short notice.

In Commission in Ordinary—Ships maintained at some designated navy yard under the commandant and in condition for service if needed, with officers and men on board necessary for their proper care.

ORGANIZATION OF THE FLEET

The standard fleet in time of peace consists of the following vessels:

(*a*) One battleship, as the flag ship of the Commander-in-Chief.

(*b*) Four divisions of four battleships each.

(*c*) As many divisions of armored cruisers as may be designated by the department.

(*d*) Such less important military ships as are ordered to the fleet. These are organized in divisions as circumstances render practicable or advisable.

(*e*) Auxiliaries as may be ordered.

(*f*) Torpedo and submarine flotillas are attached to the fleet when practicable. As far as practicable a tender is assigned to each torpedo flotilla and to each submarine group.

An officer commands each flotilla and the tenders and other vessels attached are under his command. His pennant is habitually flown abroad the most suitable tender.

Each torpedo and submarine flotilla is composed of as many groups of torpedo vessels and submarines as found advisable, the tactical unit ordinarily being five vessels, under a group Commander.

The tender assigned to each submarine group furnishes quarters for the submarine crews and officers.

The tenders are the bases of the flotillas and groups, all accounts being kept on board these vessels, as well as stores, funds, provisions, and spare parts.

RESERVE FLEETS

When conditions warrant it a reserve fleet is maintained on each coast of the United States or elsewhere, such fleet to be composed of ships in reserve. The ships of such a fleet, so far as possible, are assembled at some navy yard or other appropriate place and organized into divisions along the same lines as those for a fleet in active service, the whole being under command of a flag officer.

To each division in reserve there is attached a sufficient number of men to enable one ship of the division to be ordered to sea on short notice, leaving enough men to care for the other ships of the division.

The Commander-in-Chief of the reserve fleet uses every effort to keep the ships under his command in complete readiness for battle, so that, as far as material is concerned, the ship can efficiently take her place in the battle line upon four days' notice. The vessels and the divisions of the reserve fleets are ordered to sea from time to time, as circumstances permit, for the exercise cruises, target practice, and such other purposes as the department may desire.

The sea and lake coasts are divided into naval districts. For administrative purposes two or more districts may be combined under a common head.

Each naval district is in charge of a "supervisor of the naval district."

The supervisor of a naval district is responsible for:

(*a*) The organization and maintenance of his district.

(*b*) The naval patrol in his district, which consists of a system of obtaining and forwarding information to and from the coast and of communicating with our naval vessels.

(*c*) The instruction of Naval Militia officers in the organization and plans of their respective districts.

(*d*) Coördination of the service of information of the naval

district with that of the branch hydrographic offices within its limits.

Radio stations constitute the principal parts of the Coast Signal Service of the Navy.

The general control of communication through radio stations, and all matters concerning their military features, location, establishment or abandonment, is directly under the Division of Operations of the Fleet.

RANK, COMMAND, AND DUTY

Officers of the United States Navy are known as officers of the line and officers of the staff.

The officers of the line are by law as follows: the Admiral of the Navy and the Admirals of the Fleets, Vice Admiral, Rear Admiral, Captain, Commander, Lieutenant Commander, Lieutenant, Lieutenant (junior grade), and Ensign.

The officers of the staff are: Medical officers, Dental officers, Pay officers, Chaplains, Professors of Mathematics, Naval Constructors, Civil Engineers.

Midshipmen are by law officers in a qualified sense, and are classed as being of the line.

Vessels of the Navy are classified and commanded as follows:

(*a*) First rates, men of war of 8,000 tons and above, 55 in number, commanded by Captains or Commanders.

(*b*) Second rates, men of war of 4,000 to 8,000 tons and converted and auxiliary vessels of 6,000 tons and above, 13 in number, commanded by Commanders.

(*c*) Third rates, men of war of 1,000 tons to 4,000 tons, converted and auxiliary vessels 1,000 to 6,000 tons, colliers, refrigerating ships, distilling, repair and hospital ships, tank steamers, and special vessels of 4,000 tons and above; 74 in number; commanded by Lieutenant Commanders.

(*d*) Fourth rates, men of war and converted and auxiliary vessels under 1,000 tons, colliers, refrigerating ships, distilling,

repair, and hospital ships, tank steamers and special vessels under 4,000 tons; 29 in number; commanded by Lieutenant Commanders or Lieutenants.

(*e*) Torpedo boat destroyers, torpedo boats, submarines, torpedo or submarine tenders, tugs, sailing ships, and stationary receiving ships, are commanded by Lieutenants (junior grade) or Ensigns.

Naval officers ordered to duty under the Lighthouse Board or the Bureau of Fisheries, or the Coast and Geodetic Survey, are under the direction of the Secretary of Commerce and Labor, the Lighthouse Board or the Superintendent of the Coast Survey, as the case may be.

The various branches of service, Staff Corps, rank of officers, and grade of enlisted men are distinguished by color of facings, style of uniform, collar ornaments, cap and hat devices, braid and chevrons of sleeve, etc. The proper uniform, military medals, badges, etc. for various occasions are set forth in uniform regulations.

THE NAVY LEAGUE

The Navy League of the United States, incorporated by patriotic citizens in 1904 for the purpose of acquiring and spreading before the American people trustworthy information relative to our naval forces and naval policy, has been a potent factor in arousing public interest favorable to an adequate navy.

It thus summarizes naval service:

The navy is our main defense. A modern navy cannot be improvised.

The navy has 21,000 miles of coast line to defend and more harbors and seaport cities and fewer strategic barriers than any other navy.

The navy must defend: Porto Rico, the Philippine Islands, the Hawaiian Islands, and the Panama Canal.

The weight of a powerful navy gives force to diplomacy.

Naval power is a legitimate factor in international settlements, because it is the evidence of national efficiency.

The navy as a trade school has been called "Our Great National University." It returns to civil life annually as many trained, efficient, and patriotic young men as are graduated from the five leading universities of the country.

The navy is one of the foundations of national credit.

Battleships are cheaper than battles.

The money for American battleships is paid to American working-men, American builders, and American craftsmen.

The navy is a school of efficiency, teaching many trades; teaching also patriotism, discipline, and cleanliness to young men, a large portion of whom are so young that they can hardly be considered as producing units.

The United States Navy suppressed piracy and the African slave trade.

It opened Korea and Japan to the outside world.

It has largely contributed to:

Arctic and Antarctic exploration and relief;

Protection of the fur seals;

Pioneer work of Coast and Geodetic Survey;

The establishment of light-house service;

Pioneer work of the Weather Bureau;

The work of the Naval Observatory and Hydrographic Office;

Explorations and preliminary surveys for various Isthmian Canal routes;

Frequent protection of missionaries and citizens abroad;

Frequent prevention of insurrection in the West Indies and the Southern republics;

Friendly offices to Cuba, Panama, San Domingo, and Nicaragua;

Repeated earthquake and famine relief, as, for instance, at Messina, Martinique, and in Ireland;

Wireless communication with ships at sea; warning of storms and dangers;

Kitchen and bakery, Naval Training Station, Newport, R. I.

Gymnasium, Naval Training Station, Newport, R. I.

Chief master at arms

Boatswain's mate 1st Class

Gunner's mate 2nd Class

Quartermaster 3rd Class

Rating badges. Blue. U. S. Navy enlisted men

CHAPTER XXV

THE NAVY DEPARTMENT AND THE SECRETARY OF THE NAVY

THE Navy Department is presided over by the Secretary of the Navy, a civil rather than a naval functionary. He is responsible only to the President, as Commander-in-Chief, for his acts.

He performs such duties as the President assigns him and has the general superintendence of construction, manning, armament, equipment, and employment of vessels of war.

The Assistant Secretary of the Navy performs such duties in the Navy Department as are prescribed by the Secretary of Navy, or required by law.

The Chief Clerk has general charge of the records and correspondence of the Secretary's office and performs such other duties as may be assigned to him by the Secretary.

In the absence of the Secretary and the Assistant Secretary the Chief of Naval Operations performs the functions of Secretary of the Navy.

Upon the Secretary of the Navy devolves the proper disbursement and expenditure of the naval appropriations aggregating, in 1915, about $142,000,000, and in 1916–17, about $300,000,000. The business of the Navy Department is distributed among the following bureaus:

The Chief of Naval Operations;

The General Board of the Navy;

The Judge Advocate General of the Navy;
Bureau of Yards and Docks;
Bureau of Navigation;
Bureau of Ordnance;
Bureau of Construction and Repair;
Bureau of Steam Engineering;
Bureau of Supplies and Accounts;
Bureau of Medicine and Surgery.

The several bureau chiefs maintain distinct offices retaining charge and custody of the records pertaining to their respective bureaus. They have the rank of Rear Admirals and are selected by the President for periods of four years, except that the Judge Advocate General has the rank of Captain.

The Solicitor of the Navy, a civilian, examines and reports upon questions of law, including the drafting and interpretation of statutes and matters submitted to the accounting officers not relating to the personnel; preparation of advertisements, proposals, and contracts; insurance; patents; the sufficiency of official, contract, and other bonds and guarantees; proceedings in civil courts by or against the Government or its officers in cases relating to material and not concerning the personnel of such; claims by or against the Government; questions submitted to the Attorney General, except such as are under the cognizance of the Judge Advocate General; bills and congressional resolutions and inquiries not relating to the personnel and not elsewhere assigned; and to conduct the correspondence respecting the foregoing duties.

The Solicitor is charged with the searching of titles, purchase, sale, transfer, and other questions affecting lands and buildings pertaining to the Navy, and with the care and preservation of all muniments of title to land acquired for naval uses.

The annual report of the Secretary of the Navy for 1915 is a very comprehensive and interesting résumé of his functions and of the activities of the Navy. He discussed in detail the need of additional ships and personnel based upon the recom-

mendations of the Navy General Board and conferences held with naval experts and patriotic men in civil life. For the first time in the history of the navy a plan was submitted by a Secretary which not only covered the necessities of the immediate future, but those covering a period of five years. This plan contemplates an expenditure of $502,482,214, and that by 1921 our Navy will be composed of the following type vessels, accepting the Navy General Board estimate of survival of present vessels and calls for:

Battleships, first line	27
Battle cruisers	6
Battleships, second line	25
Armored cruisers	10
Scout cruisers	13
Cruisers, first class	5
Cruisers, second class	3
Cruisers, third class	10
Destroyers	108
Fleet submarines	18
Coast submarines	157
Monitors	6
Gunboats	20
Supply ships	4
Fuel ships	15
Transports	4
Tenders to torpedo vessels	3
Special types	8
Ammunition ships	2

With reference to the illuminating experiences of the European War and the extensive maneuvers undertaken by our fleet for the purpose of investigating its capacity for defending this country against hostile attacks, the Secretary states: "It is practically the unanimous opinion of the responsible officers who engaged in these maneuvers that an adequate supply of proper scouts is essential. Improvised scouts, such as destroyers, are not satisfactory. It is necessary that the scout should be a vessel designed for scouting duties and sufficiently large and robust to do its work practically without regard to weather conditions. In case of war the country having the superior fleet will probably control the sea, but experience has demon-

strated the fact that fast cruisers may keep the sea for an indefinite period, obtaining supplies and coal from captured merchantmen and in the meantime do an inestimable damage to the commerce and lines of communication of the country with the more powerful navy. Without fast cruisers of equal or greater power, both in speed and armament, the real control of the sea and protection to commerce and lines of communication cannot be assured. In actual fleet operations, such a problem as must confront the United States in case of war with an overseas enemy, the fast cruiser becomes the eyes of the fleet * * * to insure success our eyes must be at least equal if not superior to the eyes of the enemy; in other words, our fast cruisers must be equal to if not superior to those of the enemy."

The inauguration of the office of Naval Operations, 1914, has resulted in a comprehensive and efficient system and coöperation of all bureaus and a closer and more sympathetic action between the Navy Department, the fleet, and the shore establishments.

Our fleets have been actively employed during the past year. The Asiatic fleet is kept in the Orient looking after American interests in the Far East, and the Philippines. In July, 1915, this fleet rendered effective relief to sufferers from the flooded districts of Canton, China. The Pacific fleet has performed important duties in Mexican waters in protecting American and foreign interests along the extended Pacific Coast of Mexico. In August a division of destroyers of the Pacific flotilla made a cruise of reconnaisance in Alaskan waters among islands of the Aleutian group, to the extreme western island of Kiska. Movements of this character are such as would be required of destroyers in time of war.

The Atlantic fleet has been unusually busy in maintaining United States neutrality and in routine drills, target practice, and maneuvers. Two United States warships in the Mediterranean have transported thousands of refugees of various nationalities from hostile ports to places of safety. Conditions in

Mexico have required the constant presence of a number of cruisers at several important Mexican ports.

The assassination of the Haitian President Guillaume Sam, July 28, 1915, necessitated the despatch of naval vessels to protect American and foreign lives and property and to restore order, including a force of 2,000 marines still on duty there.

During the winter the Atlantic fleet conducts extensive target practice, tactical exercises of the ships, and small arms practice at the United States Naval base, Guantanamo, Cuba. The Atlantic fleet of 64 ships was reviewed by President Wilson at New York City, May 17, 1915. An imposing review of this fleet took place at Boston in August, incident to the Annual Conference of the Governors of States.

Secretary of the Navy Daniels is enjoying the satisfaction of excellent results from several radical changes introduced early in his administration affecting the contentment, health, education, advancement, and promotion, reënlistment and recruitment of enlisted men.

In his annual report for 1915 he comments as follows:

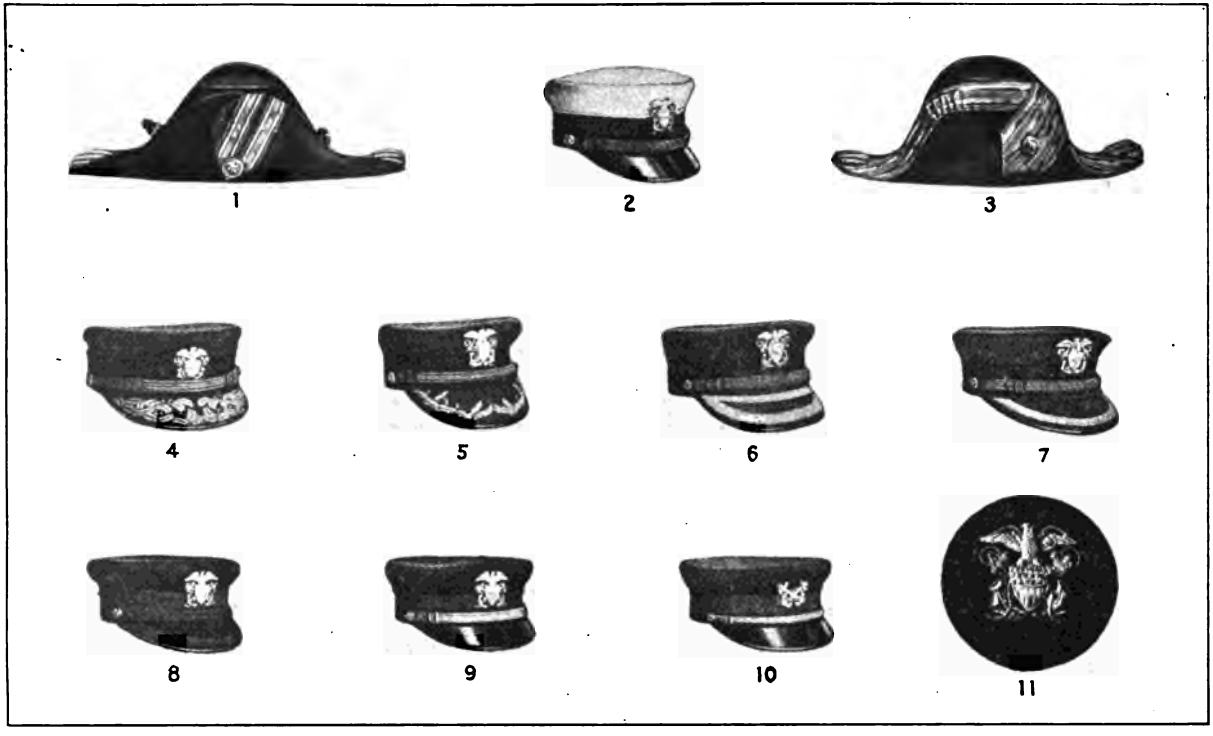
"In my last annual report mention was made of the department to raise the standard of the enlisted men by opening the door of opportunity to the worthy and by weeding out those who bring discredit on their uniform. This policy has been continued, with the result that it has become more generally known that the position of an enlisted man is an honorable one and that none but men of good character are accepted, and that a young man who enlists in the Navy has brighter prospects for education and advancement than the great majority of his former associates. He has before him the opportunity of being appointed as midshipman at the Naval Academy, where he will be educated as an officer and commissioned upon graduation as ensign and take his place in the line of promotion to the highest rank in the Navy. If he should pass the age limit for entrance to the Naval Academy he still has an opportunity of reaching the highest commissioned rank through the warrant

grades, or he may enter the pay corps directly as a commissioned officer or through the grades of pay clerk and chief pay clerk. Appointment to these grades are made only from among the chief petty officers. This opens 200 positions to promotion for enlisted men. Aside from the opportunities of promotion to warrant and commissioned rank, which have been greatly increased during the past two years, the Navy offers to the young men of the country a career as an enlisted man which no industrial institution offers.

"Since 1901 it has been possible for enlisted men who have attained the warrant grades to obtain commissions as ensigns in the line of the Navy, but only forty-five such appointments have been made.

"It has been noted during the last year that parental objection to enlistment has largely disappeared, and it is now a common occurrence for parents to take the initiative in having their sons enlist. The greater portion of appeals from parents are not to get their sons out of the Navy, but to get them in."

"The lesson of the European war warns us that it is better to spend money in time of peace for preparation than to run the risk, however remote, of sorely wanting ships and munitions if suddenly needed."—Josephus Daniels, Secretary of the Navy.



Cocked hats, caps, and cap device U. S. Navy

1. Commissioned officers below the rank of Commodore
2. All officers: visor, strap, and button ornaments to correspond with blue caps
3. Admiral of the Navy
4. Admiral, flag officers, and Commodores
5. Captains and Commanders
6. Staff officers of rank of Admiral and Commodore
7. Staff officers of rank of Captain or Commander
8. Chaplains
9. } Warrant officers, mates, and Paymasters' Clerks
10. }
11. Cap device

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Trophy for excellence in Naval Gunnery

CHAPTER XXVI

THE CHIEF OF NAVAL OPERATIONS

THE Chief of Naval Operations, Rear Admiral William S. Benson, U. S. N., under the direction of the Secretary of the Navy, is charged with the operations of the Fleet and with the preparation and readiness of plans for its use in war.

The functions of this office include the direction of the Naval War College, the Office of Naval Intelligence, the Office of Gunnery Exercises and Engineering Performances, the operation of the Radio Service and of other systems of communication; the operation of the Aeronautic Service; of Mines and Mining; Naval Defense Districts; Naval Militia; and the Coast Guard when operating with the Navy.

The Chief of Naval Operations directs all strategic and tactical matters, organizations, maneuvers, target practice, drills and exercises, revision and enforcement of all tactics, drill books, signal codes, and cipher codes. He advises the Secretary in regard to the military features of all new ships and proposed extensive alterations of a ship which will affect her military value, all matters pertaining to dry docks and fuel reservations or depots. He also considers questions concerning the location of radio stations, reserves of ordnance and ammunition, fuel, stores, and other supplies of every nature affecting the demands of the Fleet. He witnesses operations of the Fleet as an observer from time to time.

In the absence of the Secretary of the Navy and the Assistant Secretary of the Navy the Chief of Naval Operations performs their functions.

by wireless telephony. This order was sent to Rear Admiral Usher, commandant of the New York Navy Yard, and was as follows: "Report as soon as practicable after the arrival of the *New York* how soon the repairs recommended can be completed." As there was no sending apparatus at the New York end of the line, the answer came back over the long-distance wires. Prolonged conversations were carried on with New York without the slightest difficulty.

Radio telephone communication between the Navy Department and a warship at sea was established May 8, 1916, for the first time as part of a demonstration of the possibilities of radio wireless telephony. Simultaneously the department was in touch with all of its land stations in continental United States and gave orders verbally to the various commandants. The Secretary and ranking officer of the Navy talked to the battleship *New Hampshire*, far off the Virginia capes, and heard distinctly the replies of her commander. Representatives of the telephone companies, whose resources had been made available for the occasion, told the Secretary that communication by wireless telephone between a land station and a ship at sea never before had been accomplished anywhere, and that the United States was the only nation that knew how to perfect such a feat.

Much of the development in radio telegraphy is due in a great measure to the original work of the Navy Department, and to the collaboration of naval experts with the eminent radio engineers of the country. At the outbreak of the European War the President delegated the censorship of radio communication between Europe and this country upon the Navy Department. The ships of all belligerent countries entering the waters of the United States were prohibited from using radio apparatus while within the jurisdiction of the United States, and the radio apparatus of such ships was sealed and in some cases the antennæ lowered and disconnected.

The Director of Naval Aeronautics supervises the operation of air craft and air craft stations in connection with the Fleet

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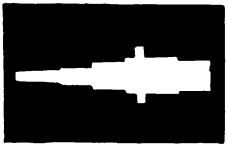
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Chevrons of enlisted men, U. S. Navy

1. Commissary Steward
2. Master at Arms
3. Bandmasters, Musicians
4. Hospital Stewards, hospital apprentices (red cloth)
5. Machinists' Mates, boiler makers, water-tenders, coppersmiths, oilers
6. Electricians
7. Yeomen, first, second, and third classes
8. Chief Yeomen
9. Gunners' Mates
10. Turret Captains
11. Carpenters' Mates, plumber, and fitters, painters, shipwright
12. Printers
13. Sailmakers' Mates
14. Blacksmiths, Ship-fitters
15. Quartermasters
16. Gun-captain
17. Boatswain's Mates, Coxswains
18. Gun-pointer, first class
19. Gun-pointer, second class
20. Ex-apprentice
21. Seaman-gunner
22. Bugler
23. Torpedoman
24. Radio-operator
25. Ships' cooks and bakers
26. Navy "E" (given to gun, turret, and torpedo crews for "excellence" in gunnery)

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Reconnaissance type, Curtis Biplane, 160 H. P.

Martin tractor, 125 H. P., dual control for training student aviators

and for strictly naval purposes. He has supervision of the training of officers and men in the Aeronautic Service and coöperates with the Division of Naval Militia Affairs in regard to the training of Aeronautic Service for the Naval Militia.

The naval aeronautical squadron accompanied the expedition to Vera Cruz in 1914 and made many successful reconnaisance flights inland for short distances.

An altitude record for hydroaeroplanes of 10,000 feet was made by Lieutenant Bellinger in 1915. A type of naval hydroaeroplane to meet the special requirements of naval service is being developed by experimentation with the wind tunnel and models and by actual flying.

The first specific appropriation for naval aeronautics was $1,000,000 for 1915. The present session of Congress has added $2,000,000 for the fiscal year 1916-17. The abandoned navy yard at Pensacola, Florida, representing an expenditure of nearly eight million dollars, is being converted into an ideal aeronautical station.

The *North Carolina* is also assigned to aviation service.

Experiments of all kinds are continually being carried out at the aeronautic station. Some of these experiments can be combined with the flying school work, such as efficiency of different lubricating oils and of different grades of gasoline; the preliminary tests of different types of floats for aeroplanes; tests of instruments; tests of special life preservers for aviators; experiments with clothing, and various other tests. In addition to the qualified aviators who have been appointed, Navy air pilots have tested out new types of floats for aeroplanes in rough weather water in the Gulf of Mexico; have made long flights to test the reliability of motors and the endurance of aviators; tested aeroplanes for speed and climb; are testing bombs and bomb-dropping appliances; trying out safety straps; trying out new types of aeroplanes in all kinds of weather to demonstrate their stability and reliability; conducting running motor and propeller tests; operating special hoisting apparatus

required for aeroplanes on the North Carolina, and a large number of minor experiments.

The 1915 appropriations have been utilized in purchasing 1 dirigible, 20 aeroplanes, 73 aeronautic motors, 1 free balloon, 1 floating dirigible shed, 1 hydrogen plant for dirigibles, 1 set of aeroplane hangars, one aeroplane wrecking derrick, costing $771,800. The balance was applied to repair and contingencies.

A new class of enlisted men is formed at the Aviation School every three months. Some of the men are taught and exercised in the principles of flight and all are trained in the mechanics of aviation. It is the intention, if authorized by Congress, to take civilian flyers into the Naval Section.

"It will hardly be denied by any normal citizen of our country that we want to use the most efficient methods to perpetuate our Government and our institutions. With a knowledge of the history of nations, if any example can be given of a nation which has maintained itself without force of arms sufficient to defend it from unjust demands, then some thought might be given the argument of those misguided and misinformed persons who protest against our nation placing itself in a position to defend our country and enforce the just demands we may be called to make of other nations.

"So long as these people base their arguments on a higher civilization we are supposed to have attained, as a guarantee of our peace and security, we can class them as impracticable visionary dreamers, who fail to realize that to protect its citizens is the first duty of a government, and without the ability to do this it has no right to be called a government."—Representative Thomas S. Crago, of Pennsylvania.

CHAPTER XXVII

THE GENERAL BOARD OF THE NAVY

THE Admiral of the Navy, George Dewey, is President of the General Board of the Navy indefinitely although past the age for active service, sixty-two years, by reason of his having received the thanks of Congress for the victory of Manila Bay, May 1, 1898. An officer so honored is retired from active service only upon his own request irrespective of age.

The General Board is composed of the Admiral of the Navy, the Chief of Naval Operations, the Major-General Commandant United States Marine Corps, the Director of Naval Intelligence, the President of the Naval War College, and such additional officers as the Secretary of the Navy may designate.

An officer above the grade of lieutenant, as secretary, records its proceedings and has charge and custody of its files and correspondence.

The General Board devises measures and plans for the effective preparation and maintenance of the Fleet for war and advises the Secretary of the Navy as to the disposition and distribution of the Fleet and of the reënforcements of ships, officers, and men of the Navy and Marine Corps.

It prepares and submits to the Secretary of the Navy plans of campaign, including coöperation with the Army and the employment of all the elements of naval defense, such as the Naval Militia, Coast Survey, Lighthouse Service, Coast Guard, and merchant vessels.

It considers the number and types of ships proper to constitute the Fleet, the number and rank of officers, and the number and ratings of enlisted men required to man them, and advises

the Secretary of the Navy respecting the estimates therefor to be submitted annually to Congress.

It advises the Secretary of the Navy concerning the location, capacity, and protection of fuel depots and supplies of fuel, and of navy yards and naval stations; the establishment and maintenance of reserves of ordnance and ammunition and depots of supplies; the delivery of provisions and stores of every kind required by the fleet.

It coördinates the work of the Naval War College and the Office of Naval Intelligence; considers and reports upon naval operations, maneuvers, tactics, organization, training, and such other subjects as the Secretary of the Navy may lay before it.

When designs are to be prepared for a new ship the Chief of Naval Operations, in conjunction with the General Board, submits to the Secretary of the Navy a recommendation as to the military characteristics to be embodied therein. Such military characteristics include a general statement as to type of ship, speed, radius of action, and armor and armament, having regard for the various arrangements that might be developed in order to obtain the benefit arising from the consideration of several possible solutions. These military characteristics are prepared by the General Board sufficiently early to permit the preliminary design to be prepared and the approximate cost determined before the estimates for the yearly building program are submitted.

The Bureau of Construction and Repair, in consultation with the other interested bureaus, then prepares and submits outline preliminary plans, approximate data, or both, showing the ship in accordance with the above recommendations. Such plans, when approved by the Secretary, are the basis of actual contract plans and specifications, subject to such modifications in non-military features as may appear desirable and practicable in working out the details.

The final preparation of departmental estimates for submission

to Congress is under the supervision of the Assistant Secretary of the Navy.

In the absence of a Council of National Defense to formulate a definite National Defense policy, it has devolved upon the General Board of the Navy to formulate a tentative Navy Department policy, and to develop this policy as far as practicable by intermittent appropriations.

In 1903 the General Board formulated a policy having in view the estimate and forecast of the future as to what would be the development of foreign countries with which conflict might be probable and what our own development should be to insure peace. A continuous naval policy of two battleships per year was submitted contemplating a fleet of forty-eight battleships by 1919, including the necessary lesser units and auxiliary ships. However, the Secretary of the Navy asked for only one battleship that year. By 1913 this program had become so hopeless that the Navy General Board was constrained to report: "There is not now and there has never been in any true sense a governmental or departmental naval policy. The Fleet, as it exists, is the growth of an inadequately expressed public opinion; and the growth has followed the law of expediency to meet temporary emergencies, and has had little or no relation to the true meaning of naval power, or to the Nation's need therefor, for the preservation of peace and for the support and advancement of our national policies."

The European War has aroused business and professional men and public officials to a profound consideration of our own national defense, with the result that the 63rd Congress gave very deep consideration to a proper national defense policy, yet declining to create a Council of National Defense as proposed to consist of the Secretaries of War and Navy, Army, Navy, and civilian experts.

The 64th Congress has undertaken this consideration anew, having before it the five-year program of naval construction and increase submitted by the Secretary of the Navy and that

of the General Board, the two programs differing but slightly, principally in the number of smaller ships recommended.

From the annual report of the Navy General Board, 1915, the following conclusions of interest to the general public are quoted:

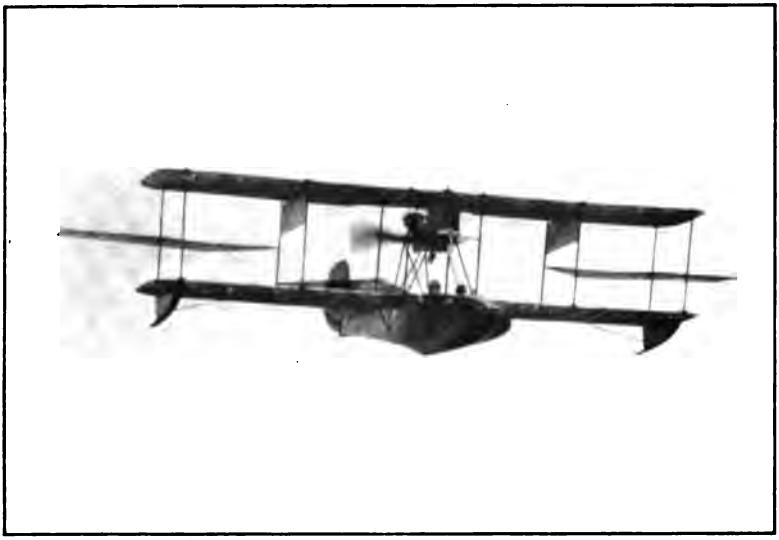
"Battleships are still the main reliance of navies. Defense from invasion is not the only function of the Navy. The United States Navy is not strong enough in peace or war. Undue weight has been attached to submarines.

"The high score of submarines was attained by surprises, not by inherent combatant superiority. The submarine is not fitted to dominate naval warfare.

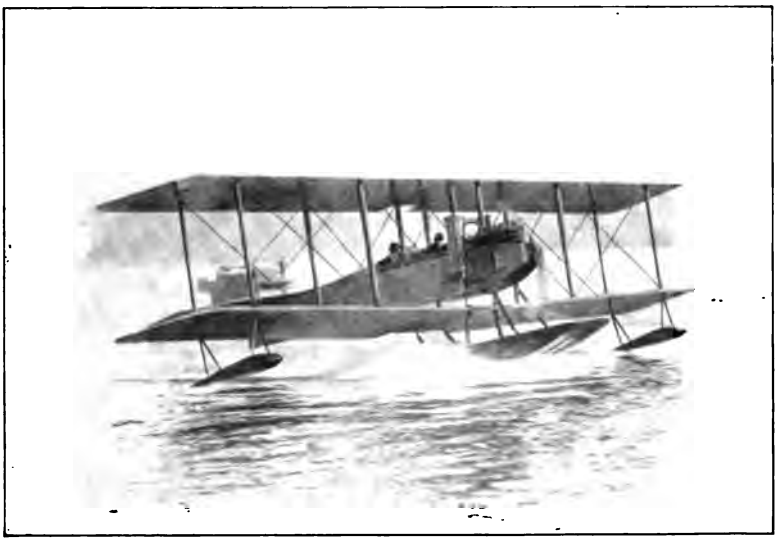
"The General Board is convinced of the great advantages, both military and economic, which will follow upon the acceptance of the general principle of a building program extending over a period of years.

"The military end to be reached at the close of such a period is thus made clearly evident by the Navy Department to Congress and to the country. On the other hand, a degree of financial security is offered the industries of the country by the foreknowledge which they thus obtain as to probable naval expenditures. This will encourage them to invest money in enlarging their plants for naval shipbuilding and its allied industries. At the same time, the strong probability of continued work throughout the period of the program will tend to reduce contract price.

"The General Board believes that the course of the present war in Europe affords convincing reasons for modifying the opinion which it has expressed for the past eleven years as to the proper size of the Navy. A navy in firm control of the seas from the outbreak of war is the prime essential to the defense of a country situated as is the United States bordering upon two great oceans. A navy strong enough only to defend our coast from actual invasion will not suffice. It must protect our seaborne commerce and drive that of the enemy from the sea.



U. S. Army dual control Curtis flying boat, passenger and pilot



U. S. Army dual control Martin Model S. hydro-aeroplane

Prison ship *Philadelphia* and detentioners at artillery and boat drills

Target butts, built by naval prisoners

The best way to accomplish all these objects is to find and defeat the hostile fleet or any of its detachments at a distance from our coasts sufficiently great to prevent interruption of our normal course of national life. Our present Navy is not sufficient to give due weight to the diplomatic remonstrances of the United States in peace nor to enforce its policies in war.

"The General Board has noted the progress of the war abroad in order to profit by its lessons in making recommendations as to the type and relative numbers of ships to be laid down.

"In the second series falls the work of the submarines. The deeds of the submarines have been so spectacular that in default of engagements between the main fleets undue weight has been attached to them. It is desirable to arrive at a true estimate of their importance, which, although undeniable, is less than the public believes. The North Sea, across which the combatants face each other, is not of great extent, and its comparatively limited area offers a field not too large for the submarine to maneuver in any part of it.

"Consequently, at the beginning of the war in the North Sea and elsewhere in Great Britain, and later in the Mediterranean, where conditions were not entirely dissimilar, the German submarines obtained some striking successes against the allies before the latter, who held the general control of the sea, discovered the proper method of guarding against attack by their invisible enemy. Both in the North Sea and in the Mediterranean the submarine upon its first appearance scored heavily.

"After six months of war the submarine form of attack drew renewed attention by its direction against hostile commerce. American public attention was redoubled toward this side of the war, owing to the humanitarian interests involved, and to the diplomatic questions which were raised thereby. It appears from British returns that the first eight months of this submarine warfare against British commerce resulted in the loss of 183 merchant vessels and 175 trawlers. The total British merchant tonnage lost was not greatly in excess of one-half a

million; the total loss under all flags was about 650,000 tons. In the same time the total arrivals and departures in British ports averaged from 1,350 to 1,400 per week, or nearly 50,000 in all.

"As to types of ships, the conclusion to be drawn so far from the history of the current war is that the battleship is still the principal reliance of navies, as it has been in the past.

"The United States Navy has hitherto been somewhat ill balanced as to the different types of ships represented in it, as battleships need auxiliaries of every sort, both combatant and administrative, for their support in battle and in being. These auxiliaries have not been authorized in proper proportion.

"With its two extensive coast lines the United States offers great opportunities to an enemy to descend by surprise upon its shores. To meet such attack the tendency of the country is to place too much reliance upon localized defences, such as fortifications, mines, and submarines. These are essential, but these alone cannot accomplish the desired purpose. The aim should be to meet the enemy at a distance and defeat him before he reaches the neighborhood of the coasts. For this purpose the country must rely upon the sea-going fleet. To forestall the attack of the enemy our main fighting force must be concentrated at a strategic centre, ready to move and defeat the hostile main body before it has entered an area where its presence is seriously dangerous to this country's interests. When concentrated the main fleet can expect to move in time to forestall the enemy's intentions only if it has an adequate information service to provide early and continuous intelligence of the enemy's movements. An efficient scouting force composed of battle cruisers and scouts must be thrown far beyond the main body to assure this indispensable service of information, which cannot otherwise be secured. In default of information the main fleet can only act blindly.

"In the general development of our naval strength, the time has now come to provide for battle cruisers and scouts. The

main duty of both types is to get information. For this purpose numbers are necessary, and to provide these numbers without undue cost we have recourse to the scout type, wherein the size is as small as will afford adequate speed and radius for the accomplishment of the work. A scout in the pursuance of her duties should rather avoid than seek battle. Yet she must seek and maintain contact with the enemy, and therefore, cannot dispense with a small armament for her protection when unavoidably forced into an engagement by ships which she cannot evade.

"The battle cruiser, also chiefly meant to secure information, nevertheless has a somewhat different rôle from that of the scout. In addition to high speed and endurance the battle cruiser has high offensive powers, so that if necessary she may fight for information and break through the hostile screen. Another important duty of the battle cruiser is to support the protective screen of lighter craft about her own fleet, which is formed to detect the approach of the enemy and guard the main body from surprise.

"The battle cruiser can do all that the scout can do and more, but her greater power entails greater cost. If the financial question were not involved, all ships built to seek information would be of the battle cruiser type.

"By her size, speed, and armament, the battle cruiser is well able to perform other combatant services than her primary one of offering security and information to the main body of battleships. She may be used to protect national sea routes, both military and commercial, and attack those of the enemy. As high speed is particularly important in torpedo warfare, she may aid the battleships in a general action by taking up a favorable torpedo position where her own heavy guns will also be effective.

"Precedent to a general action we may normally expect the seas to be swept by the lighter and faster craft of both belligerents seeking to damage hostile trade, to discover the intentions

of the enemy, and to draw him into eccentric and unwise movements. Such has been the principal employment of battle cruisers in the present war. They have been in contact with the enemy, and their performances have attracted much public attention; but as yet the main forces of battleships have not been engaged and the control of the sea remains in the hands of the powers having the superior battle fleet. As in the case of submarines, so in the case of battle cruisers, the particular course of the present war does not justify the prevalent exaggerated idea of their importance."

"The American coast facing the Pacific Ocean is not well fortified; therefore Americans have become very nervous about the new rising nation, which is accredited as being a military race. Americans think that Japan will usurp all the markets of China and drive the foreigners out of Asia. Public opinion is in accord that the rival of America is Japan, and that a powerful navy must be constructed against the Rising Sun. They are endeavoring to complete the Panama Canal. . . .

"Nothing can be more dreaded than crazy people, and the Japanese are a crazy nation. In fighting she will go on like mad, as was well illustrated in the late war. The Japanese are always ready to throw away their lives for the glory of the State; they regard their lives as light as the weather. On the other hand Americans and Europeans attach too much importance to money; those who love money love their lives. Suppose the Americans and Japanese —whose ideas of death are fundamentally different—should come to fighting. *The final result will be easily foretold.*"—Interview with Count Okuma in the New York *Times*.

CHAPTER XXVIII

THE JUDGE ADVOCATE GENERAL OF THE NAVY

THE office of Judge Advocate General of the Navy, since November 5, 1913, has been administered by Captain Ridley McLean.

The duties of the Judge Advocate General of the Navy are as follows: to revise and report upon the legal features of and have recorded the proceedings of all courts martial, courts of inquiry, boards of investigation, inquest, and boards for the examination of officers for retirement and promotion in the naval service; to prepare charges and specifications for courts martial, and the necessary orders convening courts martial in cases where such courts are ordered by the Secretary of the Navy; to prepare court-martial orders promulgating the final action of the reviewing authority in court-martial cases; to prepare the necessary orders convening courts of inquiry in cases where such courts are ordered by the Secretary of the Navy, and boards for the examination of officers for promotion and retirement, and for the examination of candidates for appointment as commissioned officers in the Navy other than midshipmen, and to conduct all official correspondence relating to such courts and boards.

It is also the duty of the Judge Advocate General to examine and report upon all questions relating to rank and precedence, to promotions and retirements, and those relating to the validity of the proceedings in court-martial cases; all matters relating to the supervision and control of naval prisons and prisoners; disciplinary ships and detentioners; the removal of the mark of desertion; the correction of records of service and reporting thereupon in the Regular or Volunteer Navy; certification of

discharge in true name; pardons, bills, and resolutions introduced in Congress relating to the personnel and referred to the department for report, and the drafting and interpretation of statutes relating to the personnel; references to the Comptroller of the Treasury with regard to pay and allowances of the personnel; questions involving points of law concerning the personnel; proceedings in the civil courts in all cases concerning the personnel as such; and to conduct the correspondence respecting the foregoing duties, including the preparation for submission to the Attorney General of all questions relating to subjects coming under his own cognizance which the Secretary of the Navy may direct to be so referred.

In addition to the above, the Judge Advocate General of the Navy investigates and reports upon questions of international law which present themselves to the Navy Department and which are referred to him. In the same way that this office is charged with the supervision, control, and regulation of naval prisoners, so is it also charged with the supervision, control, and regulation of prisoners of war. The officers of this Department have been active studying and digesting the experience of belligerent nations during the present war, in order that questions concerning prisoners of war confined under the Navy Department in future wars may embody all of the experience derived from the present conflict.

It is not generally realized that officers in the Navy are required to undergo physical, mental, and professional examination on entrance, and on the occasion of each successive promotion, and that full records are kept of the duty performed by each. All records of this nature, together with the necessary correspondence incidental to conducting these examinations and maintaining the records of officers, is conducted by this office.

Captain McLean and naval officers in charge of Naval Detention Barracks and Prison Ships have made a very careful study of desertion, its causes and punishments and the rejection of undesirables in the Navy. In this Secretary Daniels has

taken keen interest and advanced certain solutions tending to controvert many of the old ideas prevailing as to recruiting, desertion, discipline, punishment, and naval training.

Notwithstanding there has been an increase of over 5,000 enlisted men during the past year, the authorized strength of 51,500 being slightly exceeded, the number of prisoners was decreased from 1,835 to 726, warranting the abandonment of the Disciplinary Ship *Topeka*, the Disciplinary Barracks, Port Royal, N. C., and the detention system and prison on board the *Philadelphia* on the west coast. About eighty per cent. of those undergoing confinement for purely military offenses have been restored to duty on probation and transferred to cruising ships.

There was a general belief that a large number of sailors enlisted in the Navy in haste and remained in only through fear of punishment. The new disciplinary system indicates that the personnel of the Navy loves the service, is proud of it, and remains in it from choice.

A regulation is now in force requiring that enlisted men who violate the rules by overstaying their leave, drunkenness, etc., be forthwith dishonorably discharged and their parents notified of the cause. A trial is being made of the principle of suspended and indeterminate sentences. A character study of individuals is being made by medical experts, special attention being given to tests of mentality.

Naval officers are investigating modern methods of penology with a view to reclaiming naval delinquents to the service through probationary sentences and assignment to cruising ships instead of confinement at shore stations. Under this system instead of keeping prisoners in detention at big expense with no commensurate returns and the loss of training, they are now given opportunity for rehabilitation and at the same time are under naval training and performing remunerative service. It has been possible to return a prison guard and administrative force of 13 officers and 495 enlisted men of the Marine Corps to active military duty.

CHAPTER XXIX

THE BUREAU OF YARDS AND DOCKS

THE Bureau of Yards and Docks is administered by Rear Admiral Frederic R. Harris, U. S. N., assisted by forty officers of the Corps of Civil Engineers, United States Navy.

The duties of the Bureau comprise all that relates to the design and construction of public works of the Navy, such as dry docks, marine railways, building ways, harbor works, quay walls, piers, wharves, slips, dredging, landings, floating and stationary cranes, power plants, coaling plants; heating, lighting, telephone, water, sewer, and railroad systems; roads, walks, and grounds; bridges, radio towers, hospitals and all buildings for whatever purpose needed, under the Navy and Marine Corps. It has charge of all means of transportation, such as derricks, shears, locomotives, locomotive cranes, cars, motor trucks, and all vehicles, horses, teams, subsistence, and necessary operators and teamsters in the navy yards. It provides clerks for the office of the commandant, the captain of the yard, and public works officer.

In general, the work of the Bureau is carried out by commissioned officers of the Corps of Civil Engineers, United States Navy, whose major duties comprise the construction, repair and maintenance of the public works and utilities of the Navy.

During the comparatively recent upbuilding of shore establishments of the Navy, large masonry dry docks have been completed at the navy yards New York, Norfolk, Philadelphia, and Charleston on the east coast, and at Mare Island and Puget Sound on the west coast. In addition a 1,000-foot dry dock is now under construction at the Naval Station, Pearl Harbor,

Placing a 13-inch gun on Battleship *Indiana*

Dry dock Navy Yard, New York

Photograph by Brown Brothers

Lighthouse tenders of the Treasury Department at outbreak of war will become mine planters under the Coast Artillery Corps, and for which complete mine planting equipment has been provided

Floating derrick *Hercules*, capacity 150 tons, New York Navy Yard

Hawaii. This dock when completed is estimated to cost approximately $4,986,500. To provide an entrance channel from the sea to the site of the dock and the naval station extensive dredging operations were necessary, over $3,000,000 having been expended for this purpose under a single contract. During the last ten years there have been expended under the cognizance of this Bureau approximately $70,500,000.

The Bureau is justly proud of its record in connection with the construction and operation of the central power plants at the various navy yards, these central plants having been provided for by Act of Congress in 1904 in order to avoid the great waste in connection with the operation of many separate plants at each yard. Fourteen such central power plants have been constructed and equipped with the most modern apparatus. To give an idea as to their magnitude it may be stated that these plants produced during the fiscal year 1915 a total of approximately 50,000,000 kilowatt hours of electric power, 6,000,000,000 cubic feet of compressed air, and 3,000,000,000 pounds of steam.

The rapid increase in the use of fuel oil as a source of power for ships has led to the construction of extensive fuel oil storage plants, some seven plants having been completed, with many others contemplated. The present capacity of these plants is approximately 30,000,000 gallons of oil, which will probably be increased to 150,000,000 gallons. These plants are equipped with powerful pumps capable of delivering heavy oils from tanks to ships at the high rate of 1,000 gallons per minute. To safeguard the storage, the tanks are equipped with automatically controlled fire systems, which provide in case of fire a blanket of inert gas in the form of foam over the surface of the oil.

The Bureau has had charge of the design and construction of radio towers and other public works connected with the development of the high-power radio stations of the Navy. The location of these stations is shown on the Military-Naval Map. The first of these stations to be completed was that at Arlington, Virginia. Others have followed at Colon and Balboa on

the Isthmus; Chicago, Illinois; Chelsea, Massachusetts; Washington, D. C.; Key West, Florida; New Orleans, Louisiana; Point Isabel, Texas; Guantanamo, Cuba; Cordova, Alaska; Keyport, Washington; San Diego, California; Pearl Harbor, Hawaii; Island of Guam; Cavite, P. I. The stations in Hawaii have been in telephonic communication by radio wireless with the radio station at Arlington, Virginia.

This Bureau has designed and constructed practically all of the important graving docks in the United States. Most of these docks have been built by and for the Navy. It has, by arrangements made between the Commonwealth of Massachusetts and the Navy Department, designed and is supervising the construction of the state graving docks in Boston. It will also give general supervision to the graving dock to be constructed by the Union Iron Works in San Francisco, California.

A member of the Corps of Civil Engineers of the Navy has been connected with the construction of the Panama Canal as Commissioner and also Engineer of Terminal Construction. This Bureau has been represented by one of its officers on the International Board of Consulting Engineers.

In recent years this corps has earned unusual distinction for so small an organization by having two of its members, Peary and Rousseau, receive the thanks of Congress and promotion to the rank of Rear-Admiral for the discovery of the North Pole and for work on the Panama Canal, respectively.

"It is better to be ready for war and not have it than to have war and not be ready for it."—General Leonard Wood, extract from speech delivered before New York Chamber of Commerce, March 22, 1916.

CHAPTER XXX

THE BUREAU OF NAVIGATION

THE Bureau of Navigation is presided over by Admiral Leigh C. Palmer, U. S. N.

This Bureau issues, records, and enforces the orders of the Secretary of the Navy as relate to the individual officers of the Navy.

It has charge of the training and education of the line officers and of enlisted men (except the Hospital Corps) at schools and stations and in vessels maintained for that purpose; the upkeep and operation of the Naval Academy, of technical schools, of the apprentice seamen establishments, and of the Naval Home, at Philadelphia, Pa.; the upkeep and the payment of the operating expenses of the Naval War College; the enlistment, assignment to duty, and discharge of all enlisted men.

It has under its direction all rendezvous and receiving ships and provides transportation for all enlisted men.

It establishes the complements of all ships in commission.

It keeps the records of service of all officers and men, and prepares an annual Navy register for publication, embodying therein data as to fleets, squadrons, and ships furnished by the Chief of Naval Operations. All communications to or from ships in commission relating to the personnel of such ships are forwarded through this bureau.

It is charged with all matters pertaining to applications for appointments and commission in the Navy.

The questions of naval discipline, rewards, and punishments are submitted by this bureau for the action of the Secretary of

foreign navies holding similar positions. The rank of Admiral is recommended for the Chief of Naval Operations in as much as he is responsible for the proper organization and preparation for war of the fleets which are commanded by Admirals.

The creation of the office of Chief of Naval Operations is reported as leaving nothing to be desired in the organization and coöperation of the various bureaus.

It is reported that the number of line officers that would be required for shore duty in time of war is 264.

The table on page 251 shows the normal distribution of officers at sea and on shore.

Very extensive post graduate instruction is afforded naval officers to better fit them for the higher duties of their profession, summarized as follows:

Naval War College at Newport, R. I.	30
Steam, electrical, and radio engineering at Naval Academy and Columbia University	40
Ordnance at Naval Academy, Naval Proving Grounds, Gun Factory, Carnegie Steel Co., Bethlehem Steel Co., Bausch & Lomb Co.	9
Civil Engineering at Rensselaer Polytechnic Institute	3
Naval Construction at Mass. Institute of Technology	12
Torpedoes on armored cruiser *Montana*	21
Law at Georgetown University and George Washington University	6
Total	121

THE NAVAL RESERVE

The Naval Reserve consists of citizens of the United States who have been or may be entitled to be honorably discharged from the Navy after not less than one four-year term of enlistment or after a term of enlistment during minority. The pay while so serving is graded from $12 per annum after four years' service, to one-half pay after twenty years' service.

When actively employed with the Navy members of the Reserve receive the rate of pay when last honorably discharged and, in addition thereto, their pay in the Reserve.

Active service with the Navy may be requested at any time after entrance to the Naval Reserve and is compulsory in time of war. A Naval Reserve button, which may be worn with civilian clothes, is now issued to all members of the Naval Reserve.

There is a quarterly muster for the purpose of inspection and signing the pay roll. Members of the Reserve of each district are organized into groups and the senior members placed in charge. Members living in a community where there are receiving or station ships report to the commanding officer of such ship for muster and inspection. Those living in isolated places fill out their own muster card. The present strength of the Naval Reserve is four hundred and ten.

RECRUITING

The recent reorganization of the recruiting service into two great divisions (separated approximately by longitude 103° West), the Eastern Recruiting District in charge of an officer stationed at New York, and the Western Recruiting District in charge of an officer stationed at San Francisco; to changes in the system of discipline and punishments; to increased educational and trade school advantages for enlisted men, and creating of the Naval Reserve, account for the following conditions:

Reënlistments and extended enlistments have increased from fifty-four per cent. in 1912, to eighty-five per cent. in 1915, with a corresponding increase in naval efficiency, and the lawful authorized quota of enlisted men in the Navy is now filled.

Training Stations for enlisted men are maintained at Newport, R. I., Norfolk, Va., Great Lakes, Ill., and San Francisco, Cal., in which about sixty per cent. of new men are given two to six months' training.

In order to supply men qualified for certain ratings which carry increased pay the following trade schools are maintained:

Electrical Schools at New York, and Mare Island, Cal.

Machinist Mates' School, and Coppersmith School, at Charleston, S. C.

Torpedo School at Newport, R. I.

Fuel Oil School at Philadelphia, Pa.

Artificer School at Norfolk.

Yeomen Schools, Hospital Attendant Schools, and Commissary Schools, at Newport, R. I., and San Francisco, Cal.

Musician Schools at Norfolk, Va. and San Francisco.

Mess Attendant School at Norfolk, Va.

NAVAL AUXILIARY SERVICE

The Naval Auxiliary Service, consisting of 225 officers and 1,102 men, manning 18 auxiliary ships at an annual cost of $793,922.30, steamed a total of 379,379 miles and delivered 384,497 tons of coal, 257,004 barrels of oil, 37,213,949 pounds of general cargo, and 2,127 passengers to Naval vessels and stations at a large saving over the prevailing commercial rates.

THE FISH COMMISSION

There are assigned to the vessels of the Fish Commission 10 officers and 115 enlisted men.

"The most important matter now before the American people is adequate preparedness, not for aggression against any nation, for we are a peaceful people, but for national defense.

"We must be prepared at all times to defend our ocean-borne commerce, our flag on the seven seas, our citizens in any alien land, and our national honor."—Robert F. Broussard, U. S. Senator from Louisiana, Member of the Senate Military Affairs Committee.

CHAPTER XXXI

THE BUREAU OF ORDNANCE

THE Bureau of Ordnance is administered by Rear Admiral Joseph Strauss, U. S. N., and a number of assistants detailed from officers of the line.

The duties of this Bureau comprise all that relate to the upkeep, repair, and operation of the torpedo stations, the naval proving ground and magazines on shore; the manufacture of offensive and defensive arms and apparatus (including torpedoes and armor); all ammunition and war explosives. It procures or manufactures all machinery, apparatus, equipment, material, and supplies required by or for use with the above.

It inspects, as the work proceeds, the installation of the permanent fixtures of the armament and its accessories on board ship, and the methods of handling, stowing, and transporting ammunition and torpedoes. It designs and constructs all turret ammunition hoists, determines the requirements and location of all ammunition hoists, and the method of construction of armories and ammunition rooms on shipboard. It installs all parts of the armament and its accessories which are not permanently attached to any portion of the structure of the hull, excepting turret guns, turret mounts, and ammunition hoists, and such other mounts as require simultaneous structural work in connection with installation or removal. It confers with the Bureau of Construction and Repair, respecting items coming under that Bureau.

It has supervision of all electrically operated ammunition

hoists, rammers, and gun-elevating gear which are in turrets; of electric training and elevating gear for gun mounts in turrets; of electrically operated air compressors for charging torpedoes; and of all range finders and battle order and range transmitters and indicators.

During the year 1915 guns for the new ships *Pennsylvania* and *Arizona* were completed and work progressed uninterruptedly on guns for the *California*, *Idaho*, *Mississippi*, and for destroyers, submarines and auxiliaries under construction. A number of guns of various calibers on various ships were replaced. All Colt automatic machine guns were modified to take service ammunition. The efficiency of the Benet Mercie automatic machine guns were increased by slight modifications.

To keep pace with the increased range of modern naval guns the 14-inch guns for the *California*, *Mississippi*, and *Idaho* are 50 calibers in length, and with enlarged powder chambers. Some of these guns have been tested. Although of lesser caliber and weight than the foreign 15-inch guns the Bureau of Ordnance is of the opinion that they are capable of penetrating the heaviest armor at oblique impacts and at the greatest effective battle range and have the advantage of flatter trajectory with greater volume of fire due to the increased number that can be mounted on any ship of equal displacement.

The United States Navy 16-inch gun, forty-five calibers, was tested in August, 1914, and fulfilled the highest expectation.

Great difficulty is experienced in securing projectiles to meet the rigid specifications from the four private manufacturers having contracts with the Navy Department. The contract price for 1915 for 14-inch projectiles was $415 each, an increase of $95 or thirty per cent. over the 1914 contracts. The manufacture of projectiles at the Naval gun factory is being developed and a separate factory has been recommended.

There has been developed a satisfactory anti-air-craft gun and projectile and an armor piercing projectile carrying a large amount of high explosives. Aeroplane bombs are being provided.

The Naval powder factory at Indian Head, Md., produced 3,984,978 pounds of smokeless powder at a coast of thirty-four cents per pound, against a cost of thirty-eight cents per pound in 1914. This was about fifty per cent. of the Navy requirements. It is expected to produce 5,000,000 pounds in 1916 and 6,000,000 in 1917. The cost, however, will be materially increased on account of the European War. The output of private powder factories has been enormously developed and their conservation for the benefit of the United States in time of war is a problem requiring careful consideration when the European War is over. The stable life of smokeless powder is not less than fifteen to twenty years.

A policy of thoroughly inspecting the ammunition of ships, when they go to navy yard for repairs, has been adopted.

Contracts for 24,500 tons of armor were let during the year at prices averaging about $440 per ton for Class A 1, $500 for Class A 2, $475 for Class B, and $450 for Class C.

Orders for 1,602 torpedoes were placed during the year, 912 being with private factories and 690 at Naval torpedo factories. With increased capacity now available at Naval stations about fifty per cent. of the Department's requirements can be supplied therein.

Much attention is now being paid to submarine mining and mine sweeping. An additional officer has been assigned to this Bureau to take charge of this subject. In addition to the mine layer *San Francisco* the *Baltimore* and *Dubuque* have been fitted out as mine layers and mine instruction ships. Several old torpedo vessels have been equipped for sweeping. A mining division has been formed in the fleet. All destroyers are being fitted for sweeping, as well as several gunboats.

The high efficiency of the Naval gun factory was increased during the year through the new methods, experimentation, and analysis in steel, new machinery, and the utilization of scrap metal. The total weight of shipments exceeded 23,000,000 pounds. The number of guns completed, lined, or overhauled was 445.

The Bureau's recommendation the past two years to extend to its employees the law granting pecuniary rewards for improvements in devices to employees of the Ordnance Department of the Army, has not yet been favorably considered by Congress.

The spectacle of millions of our citizens rising in their might between sun and sun to face a disciplined enemy is inspiring in peace but historically discouraging in war. However brave the men, the soldier must be drilled, disciplined, and prepared. The sober truth of history not prepared for exclusive consumption in the public schools is that we have paid a bloody price for the delusive belief in our superiority and our indifference to the necessity of the drill sergeant.

DEFENSE, NOT AGGRESSION, OUR POLICY

Our military and naval forces will be purely defensive. The policy of our republic is against territorial aggression. *We wish to conquer no nation. We have no revenge to wreak, no dominion to assert, no policies to extend to strange peoples.* We are content to develop the resources and wisely to govern and promote the future welfare of what we now have and of our own people. Our policy of preparedness is therefore one solely of self-defense against the possible aggressor. The lack of preparation is an invitation to that aggressor to invade, to plunder, to conquer.—From a speech by Senator Lawrence Y. Sherman of Illinois at Minneapolis, November 16, 1915.

Navy Yard, Portsmouth, New Hampshire

Floating Dock *Dewey*. Docking Battleship *Connecticut*

Copyright, 1916, *Popular Science Monthly*

How the "F-4," suspended from six pontoons, was towed into Honolulu

The disaster was caused by a leak resulting from a corroded battery lining and corroded rivets, and the failure of the boat, through poor diving qualities, to respond promptly to a rudder change which should have brought her to the surface

CHAPTER XXXII

THE BUREAU OF CONSTRUCTION AND REPAIR

THE Bureau of Construction and Repair is administered by the Chief Constructor, Admiral D. W. Taylor, U. S. N. assisted by 9 Naval Constructors with rank as follows: 1 Commander, 3 Lieutenant Commanders, and 5 Lieutenants.

The work under this Bureau is done by the Construction Corps, the authorized strength of which is ninety-nine officers. All Naval Constructors are Naval Academy graduates who have been specially selected for this work. Usually only the honor men of each class are detailed to the Construction Corps. Formerly the officers of this corps were given a post-graduate course in naval construction in one of the schools abroad—English, French, or German, but in 1901 a course in warship design was started at the Massachusetts Institute of Technology where all Naval Constructors now receive their post-graduate education.

The officers of the Construction Corps are engaged mainly in management work at the navy yards in repairing and altering old vessels and in building new vessels. A considerable number of Naval Constructors are also on duty at the various private ship-building plants, superintending the construction of naval vessels. The management of many of the shipbuilding yards in the United States is in the hands of former Naval Constructors who have resigned because of the great opportunity for financial betterment in private life.

Upon the Bureau of Construction and Repair devolves the re-

sponsibility for the design of all naval vessels. The immediate responsibility for the design and proper working of certain features of ships rests with two other Bureaus in the Navy Department, namely, the Bureau of Steam Engineering and the Bureau of Ordnance. Broadly speaking, the cognizance of the three technical bureaus under the Navy Department places the responsibility for the propelling machinery under the Bureau of Steam Engineering, the armor and armament under the Bureau of Ordnance, and the hull with its extensive equipment and auxiliaries under the Bureau of Construction and Repair. The last mentioned Bureau installs the guns and armor for the Bureau of Ordnance. All such auxiliaries and equipment as anchors, capstans, windlasses, steering gear, ventilating apparatus, cordage, flags, draining and fire systems, etc., are under the Bureau of Construction and Repair.

It is interesting to note that in providing submarines for the Navy, the question of design has in the past been left in great measure to the firms submitting bids, since builders controlled many patents and methods of their own. Complete designs for submarines are now prepared by this Bureau, but builders are allowed to submit bids on their own designs in addition to those prepared by the Bureau.

In the design of the *California* class of battleships which are to be electrically propelled, considerable improvement has been made in the habitability of the ships, especially in the living conditions for the enlisted men. These ships will have commodious reading and recreation rooms, laundries and improved culinary and washing arrangements.

One of the most interesting scientific activities under the Bureau of Construction and Repair is the model basin at the Washington Navy Yard. The present Chief Constructor of the Navy, Rear Admiral D. W. Taylor, U. S. N., is the designer of the apparatus used at the model basin. The purpose of this basin is to ascertain by experimentation on small models what the behavior of the full-sized ship will be as to speed

and seaworthiness. Before the advent of model basin methods, it was largely a matter of guess as to what engine power was necessary and what shape of hull was best adapted for giving the full-size ship the desired speed. This cannot be worked out by pure mathematics. By the methods devised and the research work done by Admiral Taylor, who is the world's greatest authority on the propulsion of ships, it is now possible to ascertain what the behavior of the largest battleship will be by towing a small model of the vessel. Models are also built by the Government and towed for private parties on payment of the cost involved in making the experiments.

An experimental wind tunnel for testing aeroplane models is another invaluable appliance developed by this Bureau, to which private builders of air craft have access. The data thus obtained has been of value in designing suitable pontoons and floats for hydro-aeroplanes and for measuring the coefficient of air friction for various varnished and unvarnished fabrics used on aeroplanes and dirigibles. A large aeroplane with wide range of speed has been designed and is being constructed at the Washington Navy Yard under this Bureau for experimental purposes and tests at Pensacola, Florida.

Extensive research work has in the past two years been done by the Bureau of Construction and Repair on deep-sea diving. Laboratory experiments were first carried out in a tank in which the depths desired were simulated by means of air pressure. The results were later checked by actual diving operations in water of great depth. These tests demonstrated the practicability of descending with safety to greater depths of water than had hitherto been reached by divers. The results of this research work have been published and are distributed free to those interested.

It devolved upon this Bureau to perform the unparalleled salvage operation of raising the ill-fated submarine F-4, weighing 265 tons, from a depth of 300 feet, off Honolulu Harbor, Hawaii. Special apparatus had to be designed throughout for this pur-

pose as none of the conventional salvage methods were applicable to this depth. The equipment used was designed and the salvage work was directed by Naval Constructor Julius A. Furer, U. S. N.

The illustration facing page 000 is from *Popular Science Monthly*, December, 1915.

"Neutrality is not merely a collocation of rights, but it involves the maintenance of duties. In order to maintain those duties, war may be necessary. War was necessary and was fought in 1812 in defense of the characteristic American policy of neutrality, which had suffered far less serious assaults than those of the past year.

"It is thus evident that by merely declaring ourselves neutral we cannot keep out of war. Like any other great national policy, it will involve force to defend that neutrality when attacked.

"American nationality and American neutrality can only be defended and preserved by the realisation of what our relation to foreign nations must be—an effective comprehension of the principles which we must champion and a readiness to prepare for such championship by adequate national sacrifices. Democracy cannot live unless it can defend itself. Manhood suffrage necessarily comports manhood service. Logic has been verified by recent history."—Frederic R. Coudert, an American lawyer of international reputation, in the February issue of *American Defense*.

CHAPTER XXXIII

THE BUREAU OF STEAM ENGINEERING

THE Bureau of Steam Engineering is administered by the Engineer-in-Chief, U. S. N. assisted by officers of the line of the Navy.

The duties of this Bureau comprise all that relates to designing, building, fitting out, and repairing machinery used for the propulsion of naval ships, the steam pumps, connections of ships, and the steam machinery necessary for actuating the apparatus by which turrets are turned. It has similar duties in regard to the motive power of aeroplanes.

It supervises the entire system of interior communications. It is specifically charged with the design, supply, installation, maintenance, and repair of all means of interior and exterior signal communications (except range finders and battle order and range transmitters and indicators) and of all electrical appliances of whatsoever nature on board naval vessels, except motors and their controlling apparatus used to operate the machinery belonging to other bureaus.

It supplies and installs all conduit and molding or other means for carrying electric wiring, the plans for such installation being made after consultation with the Bureau of Construction and Repair and being subject to the approval of that Bureau.

It has charge of the design, manufacture, installation, maintenance, and repair of the radio outfits on board ship and on shore.

It has supervision and control of the upkeep and operation of the Engineering Experiment Station at Annapolis, Md.

This Bureau was materially restricted in its outpost and opera-

tions the past year due to the reduction of its appropriations below that of previous years. There was a material increase in the size and horsepower of the fleet, and the European War greatly increased the cost of raw materials and supplies of all kinds, and caused delays in deliveries, circumstances over which the Bureau had no control. There was considerable delay in completing designs for new ships, due to the shortage of draftsmen and technical employees. During the year the electric plants of twenty-six destroyers were doubled and large searchlights installed thereon.

The Darien radio station, Canal Zone, the first of the chain of high-power radio stations provided for 1912, was completed May, 1915. This affords constant direct communication between Washington and Panama. The success of this station has exceeded the anticipations of the Department. This radio system is of value not only to the Navy and War Departments, but to the State Department and commercial interests in general. The complete system will comprise about fifty shore stations. Naval Militia organizations are being equipped with field sets for training purposes and for use in the field.

The Bureau inspects all fuel for the Fleet. Tests of Alaska coal show it to be entirely satisfactory for use on naval vessels.

At New London, Conn., a prolonged test of three methods of storing coal is being conducted: (a) in the open; (b) under cover, (c) under water. This test has been going on for four years without any conclusive evidence having been developed as to the best method.

Through coöperation with the Bureau of Standards and Experimentations, much progress has been made in standardizing specifications, the practice now being to make annual contracts instead of short contracts. An experiment station is maintained for this purpose under a staff of experts, who are not sufficient in number, however, to meet the requirements of the Bureau. This station is maintained at the Naval Academy, Annapolis, and in addition to its work of standardization

makes tests of steel, fuel, packing, and other materials used by the Bureau, with a view to improving specifications.

An experienced inspection force is maintained at private plants which have large contracts for materials under the cognizance of the Bureau.

"When the great interests of a nation, her dignity, her rights, the resources of her livelihood or even her liberty and her honor are at stake, men are in duty bound to go to war, to wage battle and risk their lives. There are considerations in this world which are higher than human lives. There are superhuman interests, there are ideals dearer than our own persons, for which it is worth while struggling, suffering, fighting, and dying. Life is not the highest boon of existence, and no sentimental reasons based on the notion of the sacredness of life will abolish struggle in the world or make war impossible."—Dr. Paul Carus.

CHAPTER XXXIV

THE BUREAU OF SUPPLIES AND ACCOUNTS

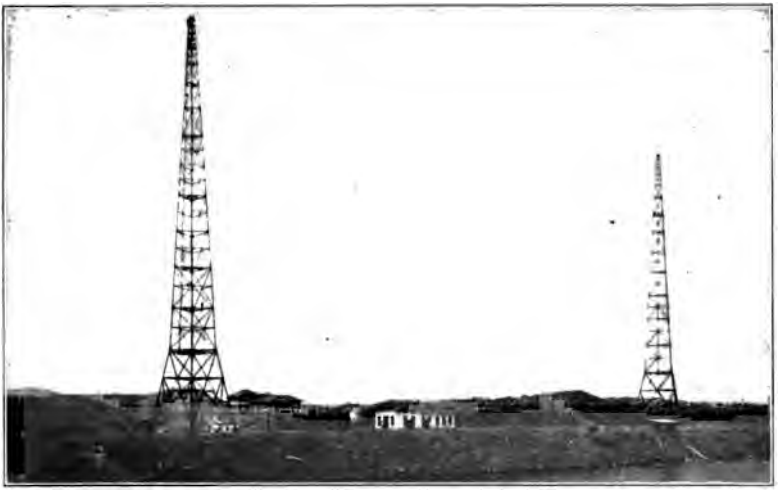
THE Bureau of Supplies and Accounts is adminstered by the Paymaster General of the Navy, assisted by various other officers of the Pay Corps.

It is the fiscal or business agent of the Navy Department, attends to the purchase, reception, storage, care, custody, transfer, shipment, and issue of all supplies for the Naval establishment, and keeps property accounts for same, except for the Marine Corps and the Bureau of Medicine and Surgery. It procures all fuel and coal for steamers and ships, including expense of transportation, storage, and handling; also water for all purposes on board naval vessels.

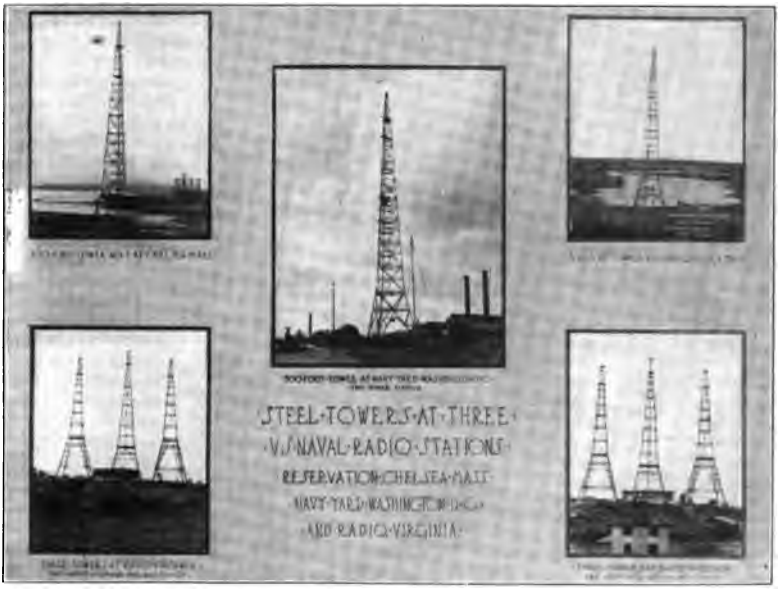
It supplies funds for disbursing officers and keeps the money accounts of the Naval establishment and all manufacturing and operating expense accounts at navy yards and stations. It prepares estimates for the pay of officers and enlisted men and attends to the payment of same.

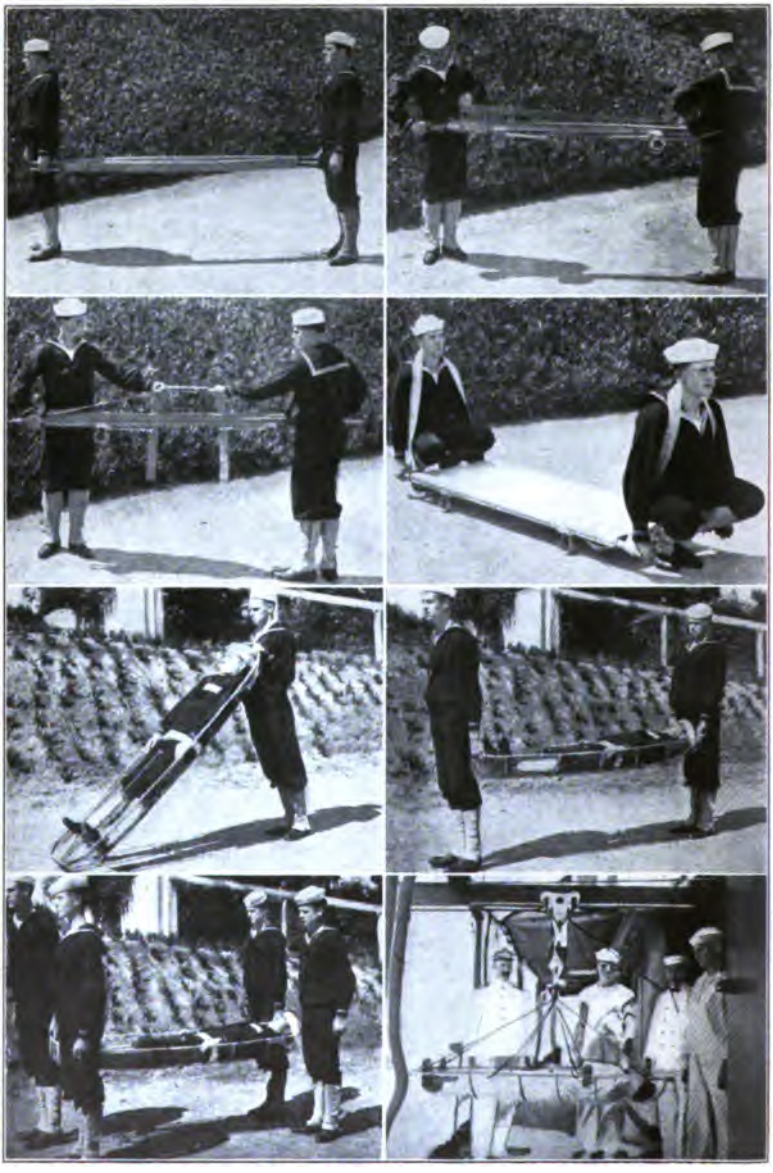
Scientific management has been developed to a very high degree in the conduct of its affairs. Efficiency and a proper safeguarding of the interests of the Naval establishment is the keynote of every transaction. A Naval Pay Officers' School is maintained for the special training of its officers in accounting and economics. Constant analysis and investigation is going on with a view to reduction in operating and maintenance expenditures of every description.

The competitive system of bidding has here reached possibly its highest development in the Government Service. Specifications describing in exact detail all ordinary kinds of com-



U. S. Naval Radio Station, Balboa, Canal Zone





Old and new style litters and litter drill in the Navy

mercial supplies are issued and every effort is made to have these specifications definitive of the quality required and as nearly as possible in conformity with generally accepted commercial standards. These specifications are recognized as authoritative in many other branches of the Government Service and establish a basis of quality for a great portion of the commercial supplies required in the Government Service.

The whole problem of fleet supply has been carefully studied and comprehensive plans formulated for use in time of war or emergency. There is an invariable confusion and great increase in cost of supplies whenever a national emergency arises for use of the fleet. Plans are being made to so handle such situations that a reasonable expansion of its contracts without an increase in unit price can readily be effected at any time, as a normal business transaction.

The expenditures for the Naval establishment for 1915 aggregated $142,959,092.11, summarized briefly as follows:

New ships	$31,990,664.22
Maintenance and operation of the fleet	55,324,768.68
Additions to shore stations plants	7,191,804.26
Maintenance of shore stations	17,117,549.56
Marine Corps	6,417,980.87
Miscellaneous	24,916,324.52

The property investment of the Naval establishment is $858,391,884.58.

The total expenditure of the Navy from 1794 to 1915 is $8,214,339,051.10.

The accompanying tabulated statement will show the operations of the supply departments at the principal navy yards and stations during the fiscal year ending June 30, 1915, which indicates to a certain extent the scope of the operations coming under the direction of the Paymaster General of the Navy and affords the American people an object lesson of the variety and extent of annual appropriations necessary for the upkeep of our navy yard and Navy.

STATEMENT 31.—STOREKEEPING OPERATIONS AT THE PRINCIPAL CONTINENTAL YARDS AND STATIONS, FISCAL YEAR 1915.

NOTE.—For complete stores statistics, see Statements 18 to 27. This statement does not include stores in transit, afloat, at foreign stations, and at magazines outside of navy yards and coal at depots outside of navy yards.

	Portsmouth	Boston	New York	Philadelphia	Washington	Indian Head	Norfolk	Charleston	Mare Island	Puget Sound
1. Number of shipments made:										
Freight	671	1,580	4,735	966	1,341	217	1,543	365	1,811	309
Express	228	576	923	315	1,014	71	492	95	168	57
Mail	188	514	12,976	1,365	10,946	38	678	158	412	122
Government conveyance	13	59	704	444	33	.....	.....	.....	.....	.....
2. Number of public bills	2,318	6,260	20,335	5,196	3,694	611	6,859	2,350	9,830	4,361
3. Average number of days between dates of deliveries and dates of acceptance	5	.....	4	6	7	3	5	4	6	3
4. Average number of days between dates of acceptance and dates of preparation of public bills.	2.9	.....	4.5	6	6	16	4	5	5	3
5. Average number of days required to make payments	15.8	.....	8.5	1	1	.....	.....	1	1	1.5
6. Number of naval supply account requests submitted	206	546	1,217	507	158	152	840	655	395	290
7. Number of requisitions prepared:										
Local	330	685	855	483	479	130	1,035	229	281	221
Bureau	514	1,470	3,103	1,402	1,481	105	1,775	561	1,477	642
8. Number of ship's requisitions filled	1,217	3,521	10,786	2,416	1,867	29	5,081	2,177	6,900	2,320
9. Number of issue invoices prepared	4,135	16,187	64,583	15,732	12,414	129	20,355	6,811	26,174	6,355
10. Number of manufacturing requests prepared	1,235	1,711	3,555	15,11	705	17	1,122	554	2,840	860
11. Number of stub requisitions filled	28,584	50,886	103,980	49,856	124,812	10,500	50,558	40,047	61,339	24,619

12. Total value of naval supply account stores on hand July 1, 1914 (in navy yards only)	$781,636	$1,828,817	$ 2,313,652	$1,445,783	$760,465	$155,579	$1,896,090	$409,217	$3,258,329	$1,979,871
13. Total value of receipts in naval supply account	1,339,547	3,165,757	7,094,941	3,760,377	2,027,949	2,167,822	5,867,924	1,080,274	3,800,669	1,518,338
14. Total issues of naval supply account stores	1,288,133	3,083,195	7,292,146	3,371,875	1,866,224	2,185,813	5,588,183	993,641	4,137,978	1,866,694
15. Total value of naval supply account stores on hand June 30, 1915 (in navy yards only)	833,050	1,911,379	2,116,447	1,834,285	922,191	137,588	2,175,832	495,850	2,921,020	1,631,515
16. Total issues of nonperishable provisions	70,835	324,977	1,952,828	346,863	.....	.....	346,648	51,973	690,189	89,641
17. Total issues of clothing in small stores	53,365	200,426	2,874,817	210,276	.....	.....	168,512	220,259	406,930	99,722
18. Total value of clothing and small stores on hand June 30, 1915	$45,398	$148,645	$1,389,409	$218,850	.....	.....	$192,814	$37,898	$547,810	$173,489
19. Total receipts of manufactured stores under title Z, naval supply account	599,631	1,028,319	1,420,595	642,787	754,098	.....	929,495	117,691	710,396	323,616
20. Total value ordnance stores on hand July 1, 1914	235,039	3,325,997	1,607,500	7,503,636	10,630,205	2,230,694	9,205,043	216,403	384,484	2,286,960
21. Total receipts of ordnance stores	241,737	2,913,160	1,173,627	4,448,275	10,165,909	3,613,206	3,637,499	498,706	1,336,746	1,492,956
22. Total issues of ordnance stores	187,326	1,285,810	518,396	3,389,762	9,266,198	3,529,416	3,992,686	130,262	1,022,092	1,321,599
23. Total value of ordnance stores on hand June 30, 1915	$289,450	$4,953,346	$2,262,731	$8,562,149	$11,529,915	$2,314,484	$8,849,856	$584,847	$699,137	$2,458,317
24. Total value scrap on hand July 1, 1914	33,263	16,278	15,377	15,901	38,327	20,280	2,164	2,472	3,838	13,209
25. Total value receipts of scrap	64,186	9,067	57,336	53,415	247,907	6,720	103,422	3,514	17,570	20,812
26. Total issues of scrap.	60,477	11,416	57,871	45,630	117,611	.....	77,504	3,607	12,222	22,345
27. Total value of scrap on hand June 30, 1915	$36,972	$13,930	$14,842	$23,685	$168,622	$27,000	$28,082	$2,379	$9,186	$11,676

Statement 31.—Storekeeping Operations at the Principal Continental Yards and Stations, Fiscal Year 1915—Continued.

	Portsmouth	Boston	New York	Philadelphia	Washington	Indian Head	Norfolk	Charleston	Mare Island	Puget Sound
28. Total cost of maintenance of storehouses charged to "Maintenance, Supplies and Accounts"										
Labor	$52,456	$33,153	$302,865	$101,400	$61,882	$1,872	$119,081	$38,103	$155,114	$61,094
Material	5,375	1,968	40,142	17,208	5,833	.....	35,373	2,704	10,389	8,228
29. Estimated value of inactive stock on hand July 1, 1914	93,351	180,000	.....	185,000	45,575	4,565	297,350	.....	13,468	350,000
30. Estimated value of inactive stock on hand June 30, 1915	104,470	146,271	.....	139,000	31,631	5,275	238,407	5,300	13,468	250,000
31. Total number of classified employees permanently on the rolls July 1, 1914	17	37	144	38	25	3	45	12	105	30
32. Total paid for salaries to classified employees	$17,664	$41,523	$139,101	$37,545	$25,607	$3,225	$45,786	$11,551	$53,717	$30,544
33. Total number classified employees June 30, 1915	17	38	133	38	42	3	46	12	107	30
34. Total labor charges for unclassified employees	$34,791	$58,799	$156,598	$43,177	$105,409	$3,613	$60,668	$21,219	$131,572	$30,550
35. Total number chemical analyses made,	.....	1,867	8,054	2,133	1,600	3,709	2,098	.....	1,135	837
36. Number of laboratory employees	.....	5	20	3	11	12	5	.....	3	3
37. Annual cost of such services	$783	$6,957	$26,305	$5,050	$7,786	$17,148	$5,022	.....	$4,555	$3,526
38. Total value of fuel on hand July 1, 1914 (in navy yards)	29,379	32,544	10,829	1,558	.....	3,829	.....	36,508	.....	431,869
39. Total value receipts fuel	86,189	277,652	446,618	527,137	.....	82,569	.....	105,573	.....	120,087
40. Total issues fuel	79,771	260,841	451,524	523,433	.....	77,869	.....	94,338	.....	268,216
41. Total value of fuel on hand June 30, 1915 (in navy yards)	$35,797	$49,356	$5,923	$2,146	.....	$7,029	.....	$47,748	.....	$283,741

	Naval training station, Newport	Torpedo station, Newport	Port Royal	Key West	Pensacola	New Orleans	Great Lakes	San Francisco	Las Animas	Total
1. Number of shipments:										
Freight	28	504	8	15	7	21	108	51	.....	14,280
Express	45	325	7	6	9	.....	.....	2	.....	4,333
Mail	3	1,047	.....	5	1	2	.....	.....	.....	28,355
Gov't conveyance	1	23	.....	4	.....	.....	.....	.....	.....	1,281
2. Number public bills	1,373	1,892	344	575	216	430	690	308	.....	58,642
3. Average number of days between dates of deliveries and dates of acceptance	3.1	6	1	1.5	6	16	3	1	.....	[1]4.8
4. Average number of days between dates of acceptance and dates of preparation of public bills.	4.7	12	1	2	3	28	2	5	.....	[1]6.5
5. Average number of days required to make payments	.....	18	1	2	1	14	5	2	.....	[1]5.2
6. Number of naval supply account requests submitted	37	350	128	93	.....	4	11	99	5	5,693
7. Number of requisitions prepared:										
Local	123	.....	.....	3	.....	47	11	.....	.....	4,012
Bureau	502	1,262	129	215	305	252	59	84	5	15,403
8. Number of ship's requisitions filled	.....	634	1	268	4	32	.....	.....	.....	36,653
9. Number of issue invoices prepared	515	3,615	38	433	13	47	25	99	.....	177,660
10. Number of manufacturing requests prepared	.....	240	.....	32	.....	.....	.....	.....	.....	14,382
11. Number of stub requisitions filled	1,295	18,352	1,019	4,062	2,038	729	1,596	586	.....	575,748
12. Total value of naval supply account stores on hand July 1, 1914 (in navy yards only)	$15,033	$97,523	$25,032	$82,593	$1,890	$815	$19,105	$861	.....	$15,074,100

[1]Average.

Statement 31.—Storekeeping Operations at the Principal Continental Yards and Stations, Fiscal Year 1915—Continued.

	Naval training station Newport	Torpedo station, Newport	Port Royal	Key West	Pensacola	New Orleans	Great Lakes	San Francisco	Las Animas	Total
13. Total value of receipts in naval supply accounts	$106,329	$353,675	$44,111	$202,890	$66,116	$70,021	$62,407	$51,129	$988	$32,781,274
14. Total issues of naval supply account stores	113,153	310,820	50,145	153,980	49,091	48,042	55,897	49,552	.....	32,504,572
15. Total value of naval supply account stores on hand June 30, 1915 (in navy yards only)	$9,109	$140,377	$19,898	$131,503	$18,915	$22,793	$25,616	$2,437	988	$15,350,801
16. Total issues of non-perishable provisions	58,559	5,562	.....	9,274	.....	855	50,126	26,759	.....	4,025,096
17. Total issues of clothing and small stores	25,246	8,654	7,630	5,520	.....	431	140,146	.....	.....	4,421,940
18. Total value clothing and small stores on hand June 30, 1915	$33,069	.....	$7,231	$11,312	.....	$340	$63,363	.....	.....	$2,869,634
19. Total receipts of manufacturedstores under title Z, naval supply account	.....	20,296	.....	12,415	.....	.....	.....	.....	.....	6,559,337
20. Total value ordnance stores on hand July 1, 1914	.....	1,335,145	24,447	1,980	.....	.....	.....	.....	.....	38,987,537
21. Total receipts of ordnance stores	8,030	6,890,044	.....	618	1,141	15,425	4,830	3,109	.....	35,945,025
22. Total issues of ordnance stores	8,030	4,062,873	3,271	1,394	.....	.....	4,755	3,037	.....	28,726,915
23. Total value of ordnance stores on hand June 30, 1915	.....	$3,668,315	$21,176	$1,204	$1,141	$15,425	$75	$72	.....	$46,205,64
24. Total value scrap on hand July 1, 1914	439	4,745	.....	332	.....	.....	.....	.....	.....	166,628
25. Total value receipts of scrap	120	9,747	.....	208	.....	.....	.....	.....	.....	594,024
26. Total issues of scrap.	440	13,079	.....	155	.....	.....	.....	.....	.....	423,261

27. Total value of scrap on hand June 30, 1915	$119	$514	.....	$379	.....	.....	.....	.....	.....	$337,391
28. Total cost of maintenance of storehouses charged to "Maintenance, Supplies and Accounts":										
Labor	3,262	9,633	$1,076	4,938	$290	$1,832	$6,914	.....	.....	947,972
Material	817	298	39	39	23	2,068	715	.....	.....	131,226
29. Estimated value of inactive stock on hand July 1, 1914	.....	.....	.....	.....	.....	.....	1,465	.....	.....	1,170,77
30. Estimated value of inactive stock on hand June 30, 1915	.....	.....	.....	.....	600	.....	1,389	.....	.....	935,813
31. Total number of classified employees permanently on the rolls July 1, 1914	1	7	.....	1	.....	.....	5	2	.....	472
32. Total paid for salaries to classified employees	$1,026	$7,280	.....	$1,157	$482	$637	$5,551	$2,170	.....	$424,573
33. Total number classified employees June 30, 1915	1	7	.....	1	2	4	5	2	.....	548
34. Total labor charges for unclassified employees	$4,318	$9,633	$1,076	$3,780	$299	$1,136	$1,363	$1,721	.....	$669,730
35. Total number chemical analyses made	.....	.....	.....	5	.....	.....	.....	.....	.....	21,438
36. Number of laboratory employees	.....	.....	.....	.....	.....	.....	.....	.....	.....	62
37. Annual cost of such services	.....	.....	.....	.....	.....	.....	.....	.....	.....	$77,136
38. Total value of fuel on hand July 1, 1914 (in navy yards)	$870	$2,089	.....	$42,435	$57	$10,775	$676	$497	.....	600,204
39. Total value receipts fuel	26,305	34,961	.....	131,640	6,262	468	16,838	22,577	.....	1,884,883
40. Total issues fuel	26,949	36,292	.....	93,208	3,304	2,775	16,281	23,041	.....	1,957,938
41. Total value of fuel on hand June 30, 1915 (in navy yards)	$226	$759	.....	$80,867	$2,925	$8,467	$1,232	$33	.....	$527,194

CHAPTER XXXV

THE BUREAU OF MEDICINE AND SURGERY

THE Bureau of Medicine and Surgery is administered by the Chief of the Bureau, Surgeon General William C. Braisted. The law provides for an Assistant to the Chief who acts as the executive, coördinating the entire organization and work of the Bureau under the supervision of the Surgeon General, and who acts as Chief of Bureau in the temporary absence of the Surgeon General.

The Bureau of Medicine and Surgery is charged with the upkeep and operation of all hospitals and of the force employed there. It furnishes advice with respect to all questions connected with hygiene and sanitation affecting the service, and, to this end, is granted opportunity for necessary inspection. It provides for all physical examinations. It passes upon the competency, from a professional standpoint, of all men in the Hospital Corps for enlistments and promotions, on forms. It keeps the record, and advises as to the assignment and duties of all enlisted men of the Hospital Corps. It recommends to the Bureau of Navigation the complement of medical officers, dental officers, and Hospital Corps for hospital ships, and has the power to appoint and remove all nurses in the Nurse Corps of the Navy.

Excepted as otherwise provided for, the duties of the Bureau of Medicine and Surgery include the upkeep and operation of Medical Supply Depots, Medical Laboratories, Naval Hospitals, Dispensaries, Technical Schools for the Medical and Hospital Corps, and the administration of the Nurse Corps, Dental Corps, and Medical Reserve Corps.

It approves the design of hospital ships in so far as relates to their efficiency for the care of the sick and wounded.

It approves all requisitions for purchase of Medical Department supplies, including medicines and instruments used in the Medical Department of the Navy, and has control of the preparation, reception, stowage, care, custody, transfer, and issues of all supplies of every kind used in the Medical Department for its own purposes.

The work of the Bureau is divided into four main subdivisions. First, the clerical and financial division, which has to do with finance, correspondence, the clerical force, file, supplies, requisitions, and public bills. Second, the division of personnel, which has to do with the Medical Corps, Medical Reserve Corps, Dental Corps, Hospital Corps, and Nurse Corps. Third, the division of records and pensions, which has to do with the physical qualifications of candidates for enlistment, appointment and promotion, medical surveys, health records, pensions, records for promotion and retirement, and vital statistics. Fourth, division of publications, which has to do with the report of the Surgeon General, the Naval Medical *Bulletin* and various other publications issued by the Bureau, problems of construction and sanitary features of ships and stations.

The Medical Corps of the Navy as at present allowed by law consists of 15 Medical Directors with the rank of Captain, 15 Medical Inspectors with the rank of Commander, 85 Surgeons with the rank of Lieutenant-Commander, and 230 Passed Assistant Surgeons and Assistant Surgeons who have the rank, respectively, of Lieutenant and Lieutenant (junior grade). In addition to the above corps there is authority of law to employ 25 Acting Assistant Surgeons with the rank of Lieutenant (junior grade).

The Medical Reserve Corps of the Navy consists in time of peace of not more than 300 medical officers not candidates for the Medical Corps, and exclusive of those not subject to call for duty under the terms of the law. Officers accepting a commission in this corps are expected to hold themselves in readiness to per-

form active duty in the Navy when called upon, at any time during a period of at least five years from the date of appointment.

The Dental Corps of the Navy consists of thirty Assistant Dental Surgeons with the rank of Lieutenant (junior grade). In addition there is an officer, a Dental Surgeon with the rank of Lieutenant (junior grade), allowed for duty at the Naval Academy. There is also provision of law for temporary appointment of dental officers not to exceed 1 for each 1,500 of the authorized enlisted strength of the Navy and the Marine Corps. A Dental Reserve Corps for the Navy is provided along the same lines as the Medical Reserve Corps.

The Hospital Corps of the Navy consists of twenty-five Pharmacists classed as warrant officers, and of Hospital Stewards, Hospital Apprentices (first class), and Hospital Apprentices. This corps at the present time numbers about 1,600 persons distributed in the above mentioned grades.

The Nurse Corps of the Navy consists of a Superintendent, and of as many Chief Nurses, Nurses, and Reserve Nurses, as may be needed.

The Bureau of Medicine and Surgery publishes a quarterly bulletin known as the United States Naval *Bulletin* which contemplates the timely distribution of such information as is deemed of value to medical officers and Hospital Corps in the performance of their duties, and with the ultimate object that both shall continue to advance in proficiency in respect to all their responsibilities. In addition to this quarterly the Bureau has prepared and revised from time to time manuals, compends, supply tables, and drill books for the use of medical officers and of the Hospital Corps. The more important being, (a) the Manual for the Medical Department of the United States Navy; (b) Handy Book for the Hospital Corps, United States Navy; (c) Drill Book for the Hospital Corps; (d) Medical Compend for Masters of the Naval Auxiliary Service (Medicine Box United States Navy). The Annual Report of the Surgeon General is an annual report to the Secretary of the Navy cover-

ing the activities of the Bureau of Medicine and Surgery for the preceding fiscal year, and the statistics of health of the Navy and Marine Corps for the preceding calendar year. It is published as a part of the report of the Secretary of the Navy and also as a separate document.

During the year of 1915 the death rate for the Navy continued very low, only 4.18 per 1,000, and the admission rate was lower than for the 10-year period from 1901 to 1910, inclusive. Considering that these statistics include the time of the Vera Cruz campaign, during which a large portion of the personnel was occupied in tropical duty for more than seven months, it is believed that the result is fully as satisfactory, and of as high a standard as that of the preceding several years.

Typhoid fever has, within the last three or four years, become an almost negligible quantity to the Naval Service. In 1911 there were 222 cases, constituting an admission rate of 3.61 per 1,000. Of these 222 cases .15 died and the total number of sick days credited to typhoid fever was 14.024. In the year of 1914 there were only 13 cases of typhoid representing an admission rate of .19, there being no deaths and only 1,027 sick days. The Surgeon General in his report says: "We seem to be seeing in the developments of the past few years the passing or the temporary subsidence of a disease as a world menace, such as has happened in past epochs to typhus, smallpox, diptheria, scurvy, and other diseases. But as with these examples, which are still constantly with us, a neglect of the precautions which have produced the happy result would undoubtedly presage a return to previous conditions. I have no hesitancy in saying that the practical elimination of typhoid from the Navy is due almost *in toto* to prophylactic inoculation. While the reduction in morbidity has been coincident with a marked improvement along the same lines in the civil population of the largest cities of the United States, which cannot be ascribed to immunizing methods, the improvement of our service has far outpaced that ashore. Undoubtedly the countrywide education regard-

ing sanitary principles, as disposal of waste, improvement of water supply, more extensive pasteurization of milk, anti-fly campaigns, etc., have been most potent in producing the results cited in the *Journal* of the American Medical Association."

The tuberculosis rate in the Navy has dropped from an admission rate of 5.98 per 1,000 in 1910 to 4.39 per 1,000 in 1914. The close association of 1,000 men inside the steel walls of their floating home, the relative lack of air, of sunshine, of space, renders the presence of an early, undetected carrier highly dangerous. The Navy maintains a special hospital for the treatment of tuberculosis at Las Animas, Colo.

The sanitary problems which confront the Navy are of a unique character, and have to do largely with questions of hygiene and sanitation aboard ships of the Navy. The air conditions of living rooms or living spaces, engine rooms, fire rooms, aboard submarines, and in connection with deep diving, are samples of the problems confronting the Medical Corps. The latest design of battleship provides recreation ground and a larger per capita air space. Certain scientific problems have engaged the interest of the Bureau during the past year and the medical officers who have had opportunity have contributed to an advancement of the understanding and solution of these problems. One of the medical officers, P. A. Surgeon French, U. S. N., a member of the board for the investigation of deep diving, submitted interesting observations which have been printed in the Naval Medical *Bulletin*. The work done by this board has made it possible to accomplish the deepest dives that have been made in the history of deep diving, in connection with the salvage of the submarine F-4. During the year several medical officers have continued their interest in the subject of intelligence tests, and in April, 1915, a symposium by Passed Assistant Surgeons Sheehan and Jenkins, and Acting Assistant Surgeon Schier was published in the Naval Medical *Bulletin*. Their investigations have added to the scientific progress of this subject. During the same year medical officers have continued

their interest in the hygiene of submarines, and valuable material has not only been collected with regard to deleterious gases, air supply, and purification, but also in connection with the hygiene of the personnel. Naval medical officers have undertaken an extensive study of the subject of aviation, not only as affects the physical qualifications of fliers, but also with regard to those mysterious and unexplainable mental conditions, and even loss of consciousness, which are reported from some sources, and which seem to have a bearing on accidents not otherwise explained.

At the present time there are seventeen hospitals in commission and under the administration of the Bureau of Medicine and Surgery. These hospitals contain the latest and the most advanced scientific equipment. The largest hospital, of about 500 beds, is situated at Norfolk, Va. This hospital was begun in 1827 and has been added to from time to time, and is situated in a reservation comprising eighty acres, the site of old Fort Nelson. In addition to the seventeen hospitals enumerated above there are certain hospitals now under construction as for instance the hospital at the Naval Station, Hawaii, and hospitals temporarily out of commission, as the Naval Hospital at Pensacola, Fla.

In addition to the Naval hospitals on shore, hospital service with the fleet is furnished by hospital ships. The Hospital Ship *Relief*, formerly a hospital ship of the Army, was placed in service in 1908 on the occasion of the cruise around the world of the American Fleet. She accompanied the Fleet as far as the Philippines, but due to her unseaworthiness has not been brought home from these islands, and is now used as a floating hospital at the Naval Station, Olongapo. The Hospital Ship *Solace*, has been in service with the Fleet since 1909. This ship is probably one of the best-equipped hospital ships of modern times. The ship is commanded by a medical officer of the Navy and the professional complement consists of six medical officers, a pharmacist, and 52 hospital corpsmen. The com-

plement from the Naval Auxiliary Service comprises about 11 officers and 71 men. The building program for 1917 contains provision for a hospital ship, which will be the first hospital ship constructed as such from the keel up.

This Bureau maintains four technical schools; the Naval Medical School at Washington, D. C.; the Hospital Corps Training School at Newport, R. I.; the Hospital Corps Training School at Yerba Buena, Calif., and the Correspondence School for Medical Reserve Corps officers, and officers of the Naval Militia, located at Washington, D. C. The Naval Medical School was established May 27, 1902, by Surgeon General Rixey. Its primary object is the training of recently appointed medical officers in those branches of medical science which are peculiar to naval requirements, or which are of unusual importance because of naval conditions. It also maintains laboratories for bacteriology, pathology, and chemistry, for research and diagnosis, as well as for instruction, and there are important pathological and helminthological collections containing specimens contributed by medical officers and others from all parts of the world. A reference library is connected with the school for the use of the student officers, and this is also utilized as a source from which medical officers of the service may draw medical books and periodicals for temporary use. The faculty consists of medical officers of the Navy detailed for that purpose, aided by various specialists who give lectures or courses in their specialties. Instruction is given in the following subjects: naval and general hygiene, naval and operative surgery, tropical medicine, pathology, medical zoölogy, bacteriology, aerology, ophthalmology, chemistry, psychiatry, radiology, and electro-therapeutics, hospital corps drills, duties of medical officers, and such other subjects as may be feasible, including naval law and regulations, and quarantine. Several of the instructors are widely known throughout the naval world by the high class of their text books on such subjects as naval hygiene, tropical medicine, etc.

The Hospital Corps Training School at the Naval Training Station, Narragansett Bay, R. I., and at the Naval Training Station, Yerba Buena, Calif., were established by Surgeon General Braisted, the object being to furnish preliminary training to newly enlisted men of the Hospital Corps. The branches taught at these schools are as follows: anatomy, physiology, first aid and emergency surgery, nursing, hygiene and sanitation, clerical duties, pharmacy, chemistry, materia medica, toxicology, dietetics, litter and stretcher drills, and academic subjects. A textbook, "The Handy Book for the Hospital Corps," has been prepared and published to facilitate the teaching.

The correspondence course for medical officers of the Medical Reserve Corps was established with a view to giving elementary instruction with regard to their duties in time of war or other emergency.

In addition to the duties in connection with the naval establishment, considerable work in connection with the physical examination of some 20,000 civilian employees under the Civil Service Commission has gradually devolved upon naval medical officers, as has likewise duties in connection with the administration of the Employees Liability Act, administered by the Department of Labor.

The Bureau has a unique function in Guam, where there are no medical practitioners among the 12,000 native inhabitants. An insular health department is maintained at the capital town of Agaña by the senior medical officer present, whose assistants exercise the duties of deputies, under the appointment of the Governor, who is an officer of the Navy. At Tutuila, Samoa, the Bureau has a similar problem in connection with the natives of this insular possession. At both places members of the Nurse Corps are assigned duties in connection with the instruction of native women in matters of hygiene, nursing, and sanitation, in addition to the elementary school branches. These native women in turn go back to their villages carrying with them ideas of better living and a solicitude for good health.

CHAPTER XXXVI

THE NAVAL MILITIA

THE first Naval Militia organization in the United States was established in the State of Massachusetts as a part of the organized Militia on March 29, 1890. Other seacoast and lake states followed. There are now Naval Militia organizations in twenty-two states, the District of Columbia and Hawaiian Islands:

STRENGTH OF THE NAVAL MILITIA, APR. 1, 1916.

	STATE	OFFICERS	ENLISTED MEN	TOTAL
1	California	64	823	887
2	Connecticut	21	328	349
3	District of Columbia	13	198	211
4	Florida	19	307	326
5	Illinois	36	571	607
6	Louisiana	25	301	326
7	Maine	10	141	151
8	Maryland	22	196	218
9	Massachusetts	53	808	861
10	Michigan	38	444	482
11	Minnesota	27	412	439
12	Missouri	17	208	225
13	New Jersey	28	387	415
14	New York	88	1,390	1,478
15	North Carolina	19	193	212
16	Ohio	22	273	295
17	Oregon	10	184	194
18	Pennsylvania	16	147	163
19	Rhode Island	11	186	197
20	South Carolina	20	191	211
21	Texas	5	101	106
22	Washington	13	313	326
23	Hawaii	1	(Now being organized)	1
	Total	578	8,102	8,680

In 1891 there was included in the Naval Militia Act, as passed by Congress, an appropriation of $25,000 for "Arming and Equipping Naval Militia." This constituted the first Federal

appropriation available for the purchase of arms, equipment, etc. Appropriations have been included annually in the Naval Act since that time, the amount appropriated for 1915 being $250,000.

Ships were loaned to the organizations and material and equipment issued by the various bureaus of the Navy Department for training purposes, the details being carried on by the "Office of Naval Militia." The states themselves purchased clothing and equipment. Some equipment was loaned by the War Department. Annual practice cruises were made, and the training of the Naval Militia gradually progressed.

On February 16, 1914, "An Act to Promote the Efficiency of the Naval Militia and for Other Purposes," commonly known as the "Naval Militia Act," became a law, and is the act under which the naval militia is now operating. In accordance with this act, the Division of Naval Militia Affairs, was established on April 12, 1914, by taking over all work formerly performed by the "Office of Naval Militia." Capt. F. B. Bassett, United States Navy, is Chief of this Division. The control of the Naval militia is to a large extent under the supervision of the Navy Department. An organization is being built up which will be of great benefit to the Navy. When it is realized that a large personnel will be needed as an auxiliary to the Navy in time of war, and especially in view of the fact that by the terms of the act the naval militia or any existing reserve must be called out before volunteers, constant efficiency in the Naval Militia is of the utmost importance.

A National Naval Militia Board, composed of five naval militia officers, representing the North Atlantic, South Atlantic, Pacific, and Great Lakes regions, convenes in Washington as often as necessary, and is freely consulted in all important naval militia matters.

Inspections of all naval militia organizations and divisions are made annually by officers of the Navy, to determine whether or not the divisions are sufficiently armed, uniformed, and

equipped to participate in the allotment of Federal Funds for the ensuing year. The first of these inspections was made in the spring of 1914, and as a result, several divisions were disbanded.

A board of naval officers has formulated examinations for officers and enlisted men, and is standardizing, in accordance with the Naval Militia Act, the qualifications of the naval militia personnel. This board met in Washington and, assisted by the National Naval Militia Board, formulated a report published to the service in the form of a General Order. This General Order establishes the units of organization, distribution of personnel, and other matters which in accordance with the act, the Secretary of the Navy is authorized to prescribe.

The unit of organization is the division (battalion).

Aeronautic divisions and marine sections are also authorized.

Brigade and Battalion organizations are maintained for administrative and other purposes.

The personnel consists of line officers for line, engineering, and aeronautic duty:

1. Medical officers, 2—3—10
2. Pay officers.
3. Chaplains.
4. Marine officers.
5. Chief boatswains and boatswains.
6. Chief gunners and gunners.
7. Chief machinists and machinists.
8. Chief carpenters and carpenters.
9. Chief pharmacists and pharmacists.
10. Chief pay clerks and pay clerks.

The rate of chief petty officers, petty officers, and other enlisted men (naval branch), and the rank of non-commissioned officers (marine corps branch) are allowed the naval militia with corresponding pay and allowances in time of war.

"Naval Militia Examining Boards," sit in Washington, D. C., to prepare questions and mark examination papers of officers of the naval militia coming up for examination.

The Navy Department has established standard physical examinations for the Naval Militia. The adoption and compliance with the provisions of these examinations, by all states and territories is a requisite in order that the Naval Militia may be called forth in time of war without further professional examination.

A tactical signal book for use in instructing the Naval Militia in visual signaling and falling in with other naval or naval militia vessels has been prepared.

An "Organization Trophy" and a "Division Trophy," to be competed for annually, have been offered by the Navy Department for the organization and division making the highest score in target practice during the year. The fiscal year 1915 was the first year during which these trophies were competed for. The "Organization Trophy" was won by Illinois, and the "Division Trophy," by the First Division, Second Battalion, Cleveland, Ohio.

The training of the Naval Militia consists in armory instruction during the winter months; small-arms target practice, short week-end cruises on vessels loaned to the naval militia organizations, and an annual cruise of about fifteen days' duration on vessels of the Regular Navy and vessels loaned to the organizations. These annual cruises of fifteen days comprise the most important feature in the naval militia training and an effort is made to teach both officers and enlisted men the elementary principles of life on board ship, and to put into actual practice the instruction they have received during the winter months. While performing such cruises the Naval Militia receive the same pay, transportation, and subsistence allowed officers and enlisted men of the Regular Navy. Officers and enlisted men also participate in target practice and short tours of duty on vessels of the fleet. All the expenses in connection with these cruises and tours of duty are paid from the naval militia appropriations. Many naval militia officers have been able to take advantage of this opportunity to perform duty in the fleet.

NAVAL MILITIA CRUISES

The 1916 cruise of the Naval Militia was held from July 15th to July 29th. It was participated in by members of all Naval Militia organizations exceeding 2,000 men. This cruise on the Atlantic Coast was made on a squadron of battleships of the reserve force, U. S. Atlantic fleet, composed of nine battleships under the command of Rear Admiral J. M. Helm, U. S. N.

The vessels were boarded at Boston, New York, Philadelphia, and Norfolk. The vessels rendezvoused at Block Island Sound and cruised in squadron until time to reach the cities at which the naval militia disembarked.

This is the first time the naval militia has performed a cruise of this nature. These nine battleships of the reserve force, U. S. Atlantic fleet were manned in a manner similar to that in which they would be manned in time of war. Each one of these battleships was in command of an officer of the Regular Navy with a limited number of officers of the Regular Navy. They each had a crew of approximately forty per cent. of enlisted men of the Regular Navy, the remainder of the crew, both officers and enlisted men, to form full complement, being made up by the Naval Militia.

At the same time that the Naval Militia of the eastern, southern, and central states was making this cruise, part of the second battalion, New York Naval Militia, cruised on the U. S. S. *Gloucester;* part of the Connecticut Naval Militia on the U. S. S. *Amphitrite;* part of the Maryland Naval Militia on the U. S. S. *Montgomery;* part of the Pennsylvania Naval Militia and second battalion, New Jersey Naval Militia, on the U. S. S. *Chicago*, and part of the first battalion, Michigan Naval Militia, cruised on the U. S. S. *Don Juan De Austria.*

The aeronautic section of the first and second battalions, New York Naval Militia, encamped at Bay Shore, L. I.

The marine companies of the Illinois Naval Militia, Louisiana

Naval Militia, and second battalion, New York Naval Militia, went into camps of instruction.

The California, Oregon, and Washington Naval Militia cruised on the Pacific Coast. On this cruise the first battalion, California Naval Militia, manned the *Oregon;* the Oregon Naval Militia manned the *Marblehead,* and the Washington Naval Militia the *New Orleans.*

The vessels of this squadron rendezvoused off Port Angeles, Washington, and then proceeded to Sitka, Alaska, thus affording an ideal outing and cruise.

The Naval Militia Act authorizes the assignment of Naval officers and enlisted men to duty as inspector-instructors of the Naval Militia. Officers have been assigned to many organizations or divisions, but, except in a few cases, this has been in addition to the officers' regular duties. A number of enlisted men have also been assigned as assistant instructors. To properly instruct the Naval Militia, many more inspector-instructors, both officers and enlisted men, are needed. It is planned to assign officers and enlisted men to all organizations eventually.

A complete library of text books has been issued to all divisions and to inspector-instructors.

A limited number of petty officers from several organizations on the Atlantic coast are given two weeks instruction annually at the Marine Corps Rifle Range, Winthrop, Md.

Aeronautic sections have been organized and steps are now being taken to organize several more. Several aeroplanes have been presented and it is anticipated that an efficient aerial reserve will be built up.

It is proposed to carry on the present program of instruction and training and to endeavor to supply all organizations with outfits of clothing and equipment as far as the funds available will permit. The training will be devoted to general naval duties and to preparing the Naval Militia so that they may be used as an auxiliary for the Navy in time of war, and may be

qualified professionally and physically in accordance with the provisions of the Naval Militia Act.

Detailed information concerning the Naval Militia can be obtained from the Division of Naval Militia Affairs, Navy Department, Washington, D. C., which supplied practically all of the above data.

"Why have we lagged behind in all modern developments of armament, ammunition, and everything that goes to make an efficient modern fighting force? We had the inventors; we had the money; we have the men.

"The submarine was an American invention.

"The flying machine was an American invention.

"Holland, the inventor of the submarine, died in poverty. Langley was laughed at for his experiments with the aeroplane, and his death was probably hastened by the ridicule that followed his brave efforts to make us understand that aerial flight was feasible."—From speech made by Honorable William J. Cary, of Wisconsin, in the House of Representatives, Washington, D. C., December 16, 1915.

CHAPTER XXXVII

THE UNITED STATES NAVAL ACADEMY

THE United States Naval Academy was founded in 1845, by Hon. Geo. Bancroft, Secretary of the Navy, in the administration of President Polk, for the proper training and education of prospective naval officers. It was then called "The Naval School," and the students "naval cadets"; the present name "midshipmen" dating from 1902. The course was for five years, the first and last year being spent at the school and the intervening years at sea. The course now is four years at the Academy with summer cruises during the second, third, and fourth years. Fourth classmen have no leave, but devote the summer months to preliminary instruction in professional branches and to drills, such as handling boats under oars and sails, and in seamanship, gunnery, and infantry drills. These practical exercises form excellent ground work for the academic course. The 1915 cruise was made on three battleships and extended to the Panama Exposition and return, through the Panama Canal including stops at Guantanamo Bay, San Diego, Los Angeles, Long Beach, and two weeks' stay at the Exposition. The 1914 cruise was to England and the Mediterranean. The 1916 is now being made and extends to Guantanamo Bay and then to Provincetown, Mass., and some other Atlantic ports it being impracticable to visit European waters on account of the war.

The pay of midshipmen is $600 per year with an additional allowance of thirty cents per day for food. The pay of an En-

sign is that of a second lieutenant of the Army, $1,700 per year, with quarters, heat, and light allowance.

A visit to the magnificent grounds and buildings of the Naval Academy which represent an expenditure of over $15,000,000 cannot fail to impress Americans with the spirit of the institution and cause them to urge young America to strive for its diploma and traditional honors.

On the banks of the Severn River, where stood old Fort Severn, surrounded by the old estates of several signers of the Declaration of Independence and many other historic landmarks, now stands this patriotic institution, the greatest Naval asset of our republic.

As at West Point, there is no class or religious distinction shown, the life of the students being extremely simple and democratic.

Some graduates after completing the required eight years of service resign from the Navy to accept positions of great responsibility in civil life.

In addition to being educated for expert seamanship and naval service, midshipmen are also schooled in the science of land warfare. Not only can they "box the compass," figure latitude and longitude and con the ship, but they are capable of leading a platoon of infantry or handling a field battery as readily as the barbette or the turret guns of their warship.

The authorized enrollment has recently been increased to 1,704 by Act of Congress, February 15, 1916. This act provides that, hereafter the corps of midshipmen shall consist of three midshipmen for each Senator, Representative, and Delegate in Congress, one for Porto Rico, two for the District of Columbia, and ten each year at large, and fifteen appointments annually from the enlisted men of the Navy.

Owing to failures and unfilled vacancies the actual attendance seldom exceeds seventy-five per cent. of the authorized enrollment.

Candidates for admission must be sixteen to twenty years

of age. The remarks relative to appointments and the physical and mental examination for admission to the Military Academy (Chapter 21) apply, in general, to the Naval Academy.

The examination papers are prepared at the Naval Academy and are finally passed upon by the Academic Board. Candidates must be unmarried and any midshipman who shall marry or who is found to be married, before his final graduation, is dismissed from the service.

A sound body and constitution, suitable preparation, good natural capacity, an aptitude for study, industrious habits, perseverance, an obedient and orderly disposition and a correct moral deportment are such essential qualifications that candidates knowingly deficient in any of these respects should not, as many do, subject themselves and their friends to the chances of future mortification and disappointment by accepting appointments to the Naval Academy and entering on a career which they cannot successfully pursue.

The selection of candidates by competitive examination or otherwise, for nomination from any congressional district, is entirely in the hands of the member of Congress entitled to the appointment, and all applications for appointments or inquiries relative to examinations should be addressed to the congressman representing the congressional district in which the vacancy exists.

Copies of the entrance regulations showing a syllabus of the first year's work at the Naval Academy and specimen examination questions may be obtained on application to the Bureau of Navigation, Navy Department, Washington, D. C., or to the Superintendent of the Naval Academy, Annapolis, Md. A copy of each of these publications will be forwarded direct to each candidate in order that he may spend his time profitably at his local school and be better prepared to pursue his course at the Academy successfully.

Occasionally ensigns are commissioned in the Marine Corps or in certain of the Staff Corps of the Navy. Several whose

vision barred them from Naval service have been commissioned in the Coast Artillery Corps of the Army. Ensigns after two years service are promoted Lieutenants, junior grade.

The Secretary of the Navy, as soon as possible preceding the graduation of midshipmen, notifies each Senator, Representative, and Delegate in Congress of any vacancy which he is entitled to fill by nomination of a candidate and one or more alternates.

In May, 1861, on the outbreak of the Civil War, the Naval Academy was removed to Newport, R. I. The three upper classes were detached and ordered to sea and the remaining acting midshipmen were quartered in the Atlantic House and on board the frigates *Constitution* and *Santee*. In the summer of 1865 the Academy was brought back to Annapolis.

The Bureau of Navigation has direction of the Naval Academy under the Secretary of the Navy, the immediate control and supervision being vested in a Superintendent and Academic Board, composed of the Superintendent, the Commandant of Midshipmen, and the heads of departments. The departments are—Executive, Physical Training, Seamanship, Ordnance and Gunnery, Navigation, Marine Engineering and Naval Construction, Mathematics and Mechanics, Electrical Engineering and Physics, English, Modern Languages, Naval Hygiene and Physiology.

Post graduate courses in Ordnance and Engineering are maintained at the Naval Academy. The Ordnance course is for one year at the Academy and one year of practical instruction at the Naval Proving Ground, Indian Head, Md., the Naval gun factory at Washington, the Carnegie Steel Co., Bethlehem Steel Co., and the Bausch & Lomb Optical Co. The Engineering course is for two years, the first year at the Academy and the second at Columbia University, and includes steam and mechanical engineering, electrical engineering, and radio engineering.

A model dairy is maintained about ten miles from the Acad-

emy under the supervision of the Bureau of Animal Industry, Department of Agriculture. It supplies 250 gallons of milk daily. To this item of food is attributed, in great measure, the improved physique of the entrance class during the summer. They have four times the usual milk ration while the second, third, and fourth class are cruising. The gain in weight of each member averages about nine pounds during this period.

Close attention is paid to athletic instruction and physical training, all kinds of indoor and outdoor sports being indulged in. To those who excel in the various events the traditional yellow "N" and class numerals are awarded. The baseball and football schedules include a series of games with all nearby colleges, the culminating games being with the Military Academy.

The following annual prizes are awarded for excellence in scholarship, military drills, and athletics:

The Class of '71 prize consists of a Navy dress sword and knot awarded "that midshipman of each graduating class of the United States Military Academy who has completed the prescribed course, and who shall be considered by the Superintendent, the Commandant of Midshipmen and the head of the department of ordnance and gunnery as the most proficient in practical and theoretical ordnance and gunnery."

General Excellence in Individual Target Practice: Gold, silver, and bronze medals, and sharpshooter's medals.

Sons of the Revolution Trophy: Name of midshipmen to be inscribed thereon each year who attains highest proficiency in great gun target practice or in practical ordnance and gunnery.

Lysistrate cup race; between the midshipmen crews of battleships.

D. A. R. cup; for excellence in seamanship and international law.

The Navigating Sextant; by Col. Robert M. Thompson for excellence in practical and theoretical navigation.

Medal presented by the Admiral Trenchard, Section No. 73 Navy League, for the best original essay on a naval or patriotic topic.

The Navy Athletic Association cup, awarded to the company winning the greatest number of points in athletics.

A sword, for general excellence in athletics.

The Thompson trophy cup; the name of the midshipman to be inscribed thereon, declared by the executive committee, Navy Athletic Association, to have done most for the promotion of athletics during the year.

The regimental flag, awarded to the company having scored the greatest number of points in official drills during the year.

A gold and eight bronze medals are awarded by the Naval Athletic Association for excellence in gymnastics.

Prizes are awarded in tennis, soccer, sailing, and track events.

The cruiser *Reina Mercedes*, captured from Spain in 1898, is maintained at Annapolis as a station and discipline ship.

Hazing is forbidden by statute and is defined as consisting of "any unauthorized assumption of authority by one midshipman over another midshipman whereby the last mentioned midshipman shall or may suffer or be exposed to suffer any cruelty, indignity, humiliation, hardship or oppression, or the deprivation or abridgement of any right, privilege or advantage to which he shall be legally entitled."

Graduation Week is known as June Week, being the first week in June and ending on Friday night. The Board of Visitors consisting of seven United States Senators and seven Representatives, with a naval officer as secretary, are in session at the Naval Academy during June Week. All exercises and schedules conform to the wishes of this board. It is the custom to hold the June ball tendered the graduates by the undergraduates on Wednesday evening at which the graduates appear in their new uniforms as ensigns. Graduation exercises are held Friday morning at which time the President of the United States, or the Secretary of the Navy, presents the diplomas. On Saturday morning each undergraduate packs his bag and hammock and goes aboard one of the battleships assigned for the summer cruise. They return from this cruise the last

week in August and move back to quarters and then depart for a month's leave during September, for which, by economy, sufficient funds may be saved.

The attendance in Washington by the Corps of Midshipmen upon the inauguration of a President of the United States is traditional.

The total number of graduates from the Naval Academy, including the class of 1916, is 4,630.

"This country has to contend now, and has had to contend in the past, with many evils, and there is ample scope for all who would work for reform. But there is not one evil that now exists, or that ever has existed in this country, which is, or ever has been, owing in the smallest part to militarism. Declamation against militarism has no more serious place in an earnest and intelligent movement for righteousness in this country than declamation against the worship of Baal or Ashtaroth. It is declamation against a non-existent evil, one which never has existed in this country, and which has not the slightest chance of appearing here."—Theodore Roosevelt.

CHAPTER XXXVIII

WARSHIPS

THE World Powers are those maritime nations which maintain large navies as well as large armies, for the proper protection of their coast lines and seaports, to repel invasions, to safeguard the national peace and protect its foreign commerce and foreign policies. Their respective navies constitute their first line of defense and offense. These navies are, therefore, designed to outfight, if possible, those of their prospective enemies, should questions of dispute arise which diplomacy cannot adjust.

A nation's wealth, population, resources, commerce, seaports, foreign policies, seacoast, and natural barriers are the dominating factors in determining the question of adequate military and naval power.

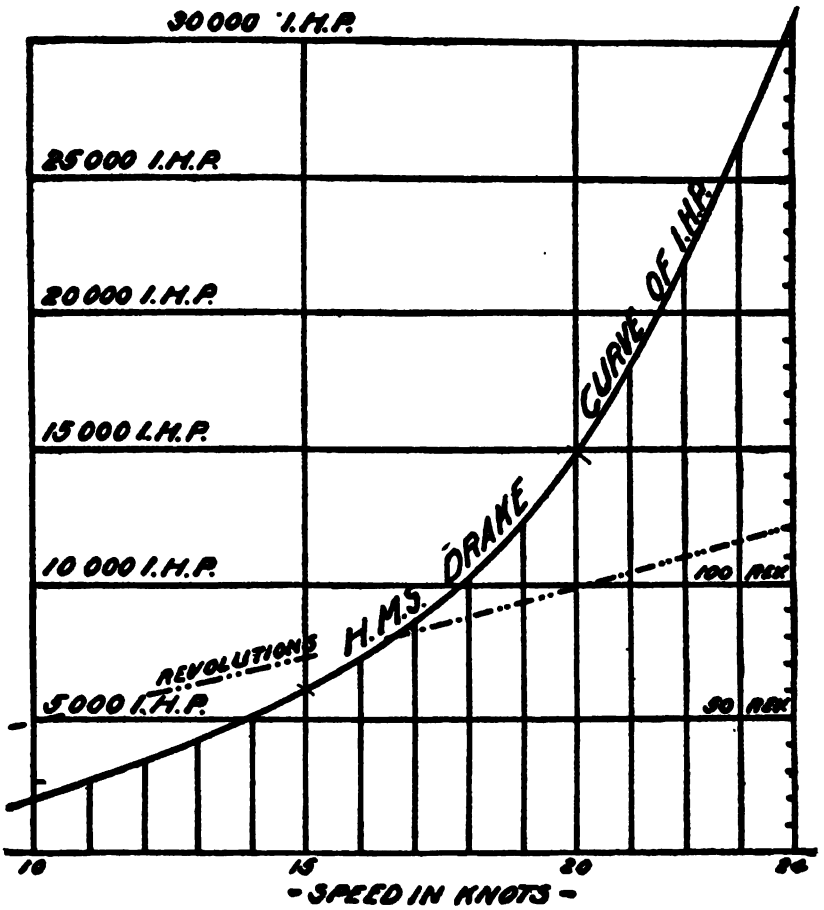
In a populous, resourceful republic, such as ours, exceeding in wealth, seacoast, number of seaports and foreign commerce each of its prospective enemies, its Navy must be limited in size and power only by a reasonable ratio of its revenues annually expended for naval defense augmented by such additional expenditure as the exigencies of the times merit.

Our most powerful rivals are England, Germany, France, and Japan.

The trend of naval development by these powers is in favor of speed, range, and rapidity of gun fire, armor protection and cruising radius. This is best reflected in the enormous increase in displacement in type-ships during the past twenty years. Displacement (tonnage) has become the simplest and most common

means of comparison of the naval strength of various powers. In this respect the United States Navy, at present, ranks probably in fifth or sixth place.

The enormous increase in displacement due to increase in speed, through engine horsepower, is graphically indicated. Through courtesy of Major J. W. Gulick, Coast Artillery



Corps, this and other diagrams and data are reproduced from "Ships and Armor."

Whereas, a speed of ten knots can be obtained with 4,000 horsepower and fifteen knots with 6,000 horsepower, a speed of twenty knots requires 15,000 horsepower, and twenty-four knots 31,500 horsepower.

The only hope of reaching a limit in naval construction lies in the possibility of an international tribunal to settle international disputes and with an international navy to enforce its edicts. Until that day, and to hasten that day, it behooves the United States to maintain a most liberal policy of naval expansion. The English navy to-day comprises over 3,000 vessels of various types or about ten times the number in the United States Navy.

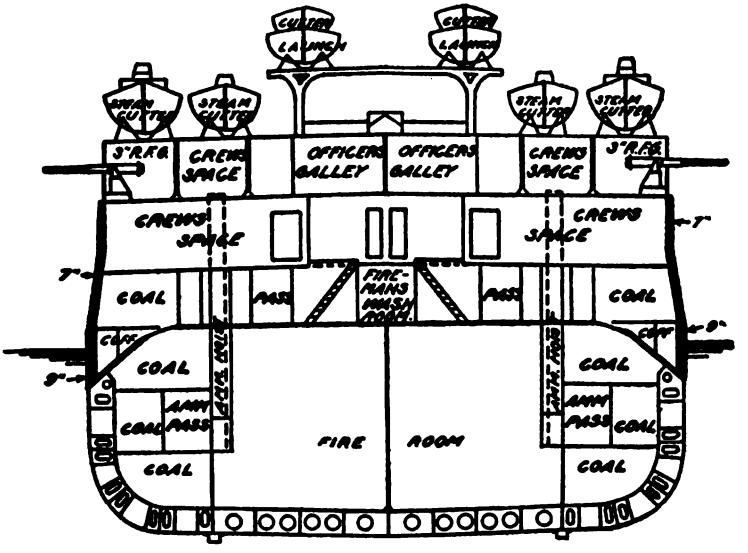
For the brief consideration possible in this volume of types of U. S. Naval ships, the Navy department classification into first, second, third, fourth rate ships and auxiliary ships is followed.

First rates exceed 8,000 tons and second rates 4,000 tons displacement. This comprises our battleships and cruisers of various types. The United States will have no battle cruisers before 1918 or 1919, the first six such types having been authorized by Congress in August, 1916.

Battle cruisers are designed to out-maneuver the most powerful battleships of to-day. Armor protection is sacrificed in favor of speed and armament in hopes that by this increase of speed and gun power such battleships can be overtaken and destroyed. In 1914, Japan had two battle cruisers, Germany four, England nine.

Our battleships are of large size, heaviest armament, thickest armor, moderately high speed (eighteen to twenty-one knots) and coal capacity. Designed to fight any ship but limited in radius of action.

Our Armored Cruisers are of large size and displacement. Less armor protection and freeboard than battleships. Speed about same as present day battleships i. e., 22 knots and great coal capacity and radius of action.



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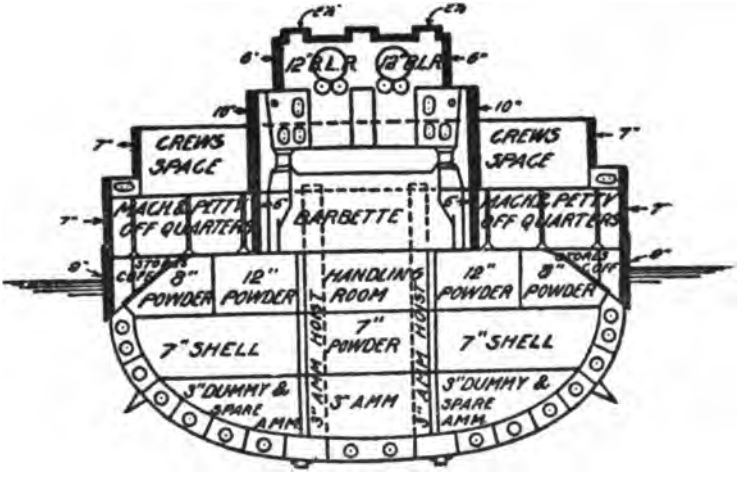


Cross sectional views of a first-class battleship

Our Scout Cruisers are the eyes of the Fleet Commander. Limited armor protection and armament, smaller size, greater speed. Not capable of engaging battleships or cruisers.

Reports indicate that coincident with the action of our Congress in authorizing Battle Cruisers in 1916, to cope with those long since a part of foreign navies, England is constructing a superdreadnaught-destroyer or battle-cruiser-destroyer, 800 feet long, and a speed of thirty-one knots. It will probably be in commission ahead of our first battle cruiser.

The length used in stating a ship's dimensions is the length on the load water line including the overhang of the stern.

The breadth is the width of the hull at the broadest part.

Displacement is expressed in tons, and is the total designed weight including the weight of hull, machinery, armor, water, stores, fuel, armament, etc.

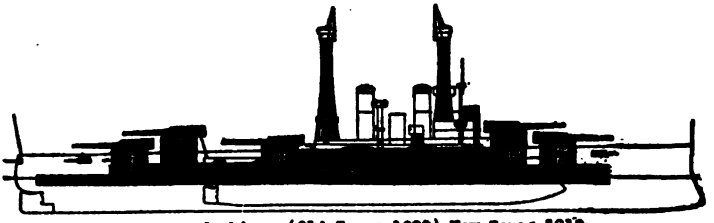
Draft is the depth of water measured from the keel or bottom to the water line when the ship is in commission ready for service.

The United States has kept pace in the construction of guns and in the development of armor plate, projectiles, and powder, although it has fallen behind from two to five knots in speed.

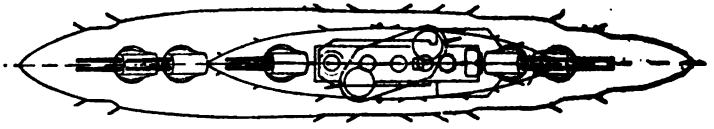
The battleship *California* is the first battleship designed to use electric turbines as a propelling power. She will have twelve 14-inch guns and will be completed in 1919, at a cost of about $15,000,000. Her bow will be of the protruding clipper type.

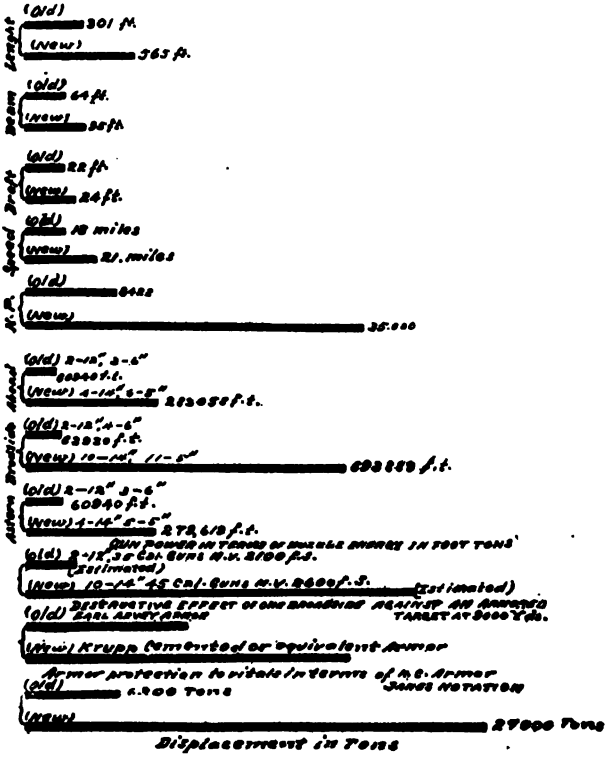
Our Government has no armor plant. The armor industry in the United States has reached a state of development equal to that of any other country and furnishes armor for warships for some other countries in competition with armor plants of Germany, England, and France. Armor plate is made in sections of the required thickness about fourteen feet in length and nine feet in width. The heaviest armor is placed amidships and extends about six feet above and two feet below the water line.

In developing armor the manufacturer must ever bear in mind that he is endeavoring to make a plate which will resist the pene-



Evolution of armored ships. (Old Terms 1892) New Terms 1912.




Length
(old) 301 ft.
(new) 365 ft.
Beam
(old) 64 ft.
(new) 88 ft.
Draft
(old) 22 ft.
(new) 24 ft.
Speed
(old) 18 miles
(new) 21. miles
H.P.
(old) 6400
(new) 35:000
Armor Broadside Mount
(old) 2-12" 8-6" 9000 f.t.
(new) 4-14" 8-6" 243000 f.t.
(old) 2-12" 4-6" 63930 f.t.
(new) 10-14" 11-6" 693 660 f.t.
(old) 2-12" 8-6" 60840 f.t.
(new) 4-14" 8-6" 278 640 f.t.
Gun Powder in Terms of Muzzle Energy in Foot Tons
(old) 2-12" 35 Cal. Guns M.V. 2100 f.s. (Estimated)
(new) 10-14" 45 Cal. Guns M.V. 2600 f.s. (Estimated)
Destructive Effect of one Broadside Against an Armored Target at 9000 Yds.
(old) Each 4000 Armor
(new) Krupp Cemented or Equivalent Armor
Armor protection to vitals in terms of K.C. Armor
Jane's Notation
(old) 6.900 Tons
(new) 27000 Tons
Displacement in Tons

trating and perforating powers of the high velocity projectile. To accomplish this the outer face of the plate is highly carbonized so as to break or shatter the projectile on impact while the inner face is of wrought steel to hold the plate together. If the plate is dense enough and tough enough to overcome the resistence of the projectile and to greatly reduce its velocity, its force will have been spent without serious injury to the ship.

Captain Tressider of the English Royal Engineers, in 1887, greatly advanced armor plate development by a chilling process using jets of water, striking the plate at an angle under pressure.

In 1891, Mr. H. A. Harvey, an American, produced in this country what is known as the Harvey process of face hardening steel in combination with the Tressider process.

In 1895, Krupp, of Germany, perfected a still more efficient method of face hardening, which was not equalled until recent years.

The principal minerals used in armor-plating processes are manganese, nickel, silicon, phosphorus, sulphur, chrome, and carbon. The metal used is cast in ingots of thirty to seventy tons. When still hot these ingots are forced into slabs of the required thicknesses by hydraulic pressure of six to fourteen thousand tons. Then follows the carbonating process in which the temperature of the gases rises to about 1,200° C. This process may last from four to twelve hours, depending upon the thickness of the plate. When the furnace has cooled the plates are oil hardened and then heated for bending, then follows the annealing process, during which the temperature rises to 750 to 800° C. The plates are then hardened by placing them in a horizontal position and turning on jets of water under pressure.

Armor plate supplied the United States Navy is graded a, b, c, or d, the cost ranging from $350 to $600 a ton.

Three new battleships have been turned over to the Government in 1916. They are the *Nevada*, *Oklahoma*, and *Pennsylvania*. They constitute the most formidable addition to the Navy that has ever been made within so short a time. They are

all oil burners and fully on a par with the best ships of any navy in the world, except as to speed.

The *Pennsylvania* is the largest and has a tonnage of 31,400. She is 600 feet long, 97 feet beam. Her engines of 31,500 horsepower will develop a speed of twenty-one knots. Her armor is eight to eighteen inches thick on turrets, and thirteen inches on barbettes. She has twelve 14-inch 45 caliber guns in four turrets on the center line and twenty-two 5-inch guns for torpedo defense. She has four 21-inch torpedo tubes submerged, broadside. This battleship will carry 65 officers and a crew of 1,160 in all.

MONITORS

Monitors sacrifice speed (12 knots) and armor in favor of draft (12 to 14 ft.). Operate in rivers and shallow waters. Armament usually two 10-inch or 12-inch guns. Length about 250 feet. Displacement 3,250 to 4,000 tons. Monitors are modeled after Ericsson's monitor of Civil War fame. Our monitors are the *Amphitrite, Cheyenne, Monadnock, Monterey, Ozark, Tallahassee, Tonopah.*

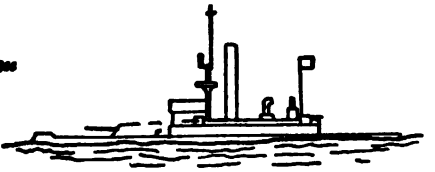
GUNBOATS

Gunboats are 1,000 to 1,400 tons displacement. Length about 200 feet. Draft about 12 to 15 feet. Speed 10 to 15 knots. Armament 4-inch guns. Normal crew 8 officers and 130 men. There are 29 gunboats.

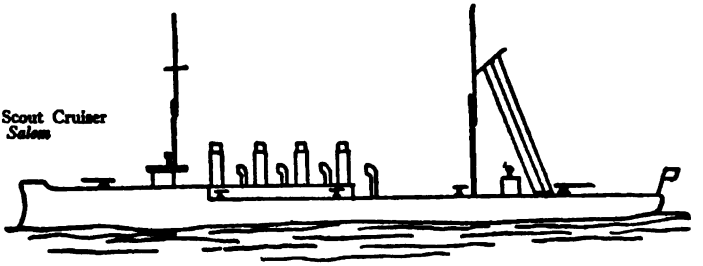
SEACOAST TORPEDO VESSELS

The development of the torpedo as a weapon of defense prompted the development of a war vessel especially designed to utilize it as a weapon of offense. These vessels, called torpedo boats, have all been striken from the Navy list. Destroyers No. 1 to No. 16 of about 230 tons displacement, commissioned in 1902-2 have been reclassified seacoast torpedo vessels. They carry two 3-inch guns and 2 18-inch torpedo

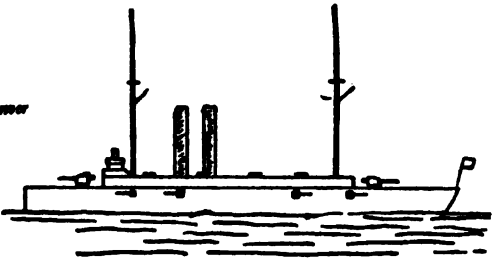
U. S. Monitor *Tallahassee*



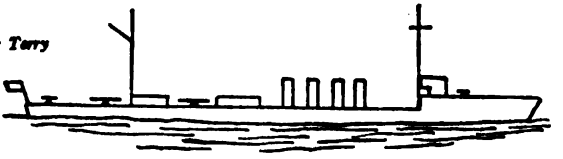
U. S. Scout Cruiser *Salem*



U. S. Gunboat *Dover*

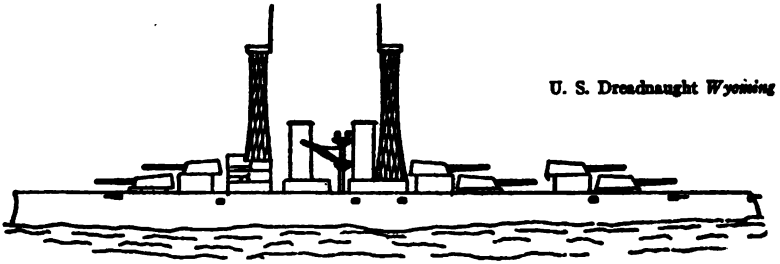


U. S. Destroyer *Terry*

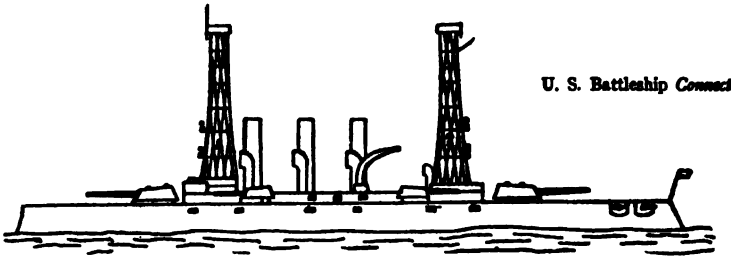


U. S. Submarine *E-1*

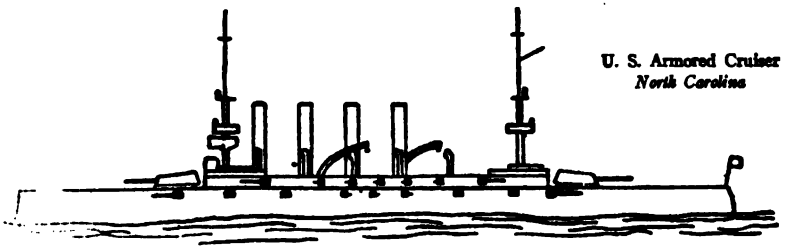
Diagrams by Major Wm. Chamberlaine, C. A. C., from "Coast Artillery War Game," reproduced by courtesy, serve to illustrate silhouettes of various types of warships.



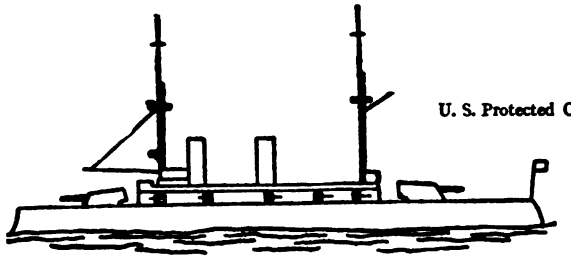
U. S. Dreadnaught *Wyoming*



U. S. Battleship *Connecticut*



U. S. Armored Cruiser *North Carolina*



U. S. Protected Cruiser *Olympia*

Diagrams by Major Wm. Chamberlaine, C. A. C., from "Coast Artillery War Game," reproduced by courtesy, serve to illustrate silhouettes of various types of warships.

tubes on deck with a complement of 3 officers and about 70 enlisted men. They are very small as compared to other types of warships, the essential feature being great speed. Like destroyers, they have no armor protection and are, therefore, very vulnerable to attack.

DESTROYERS

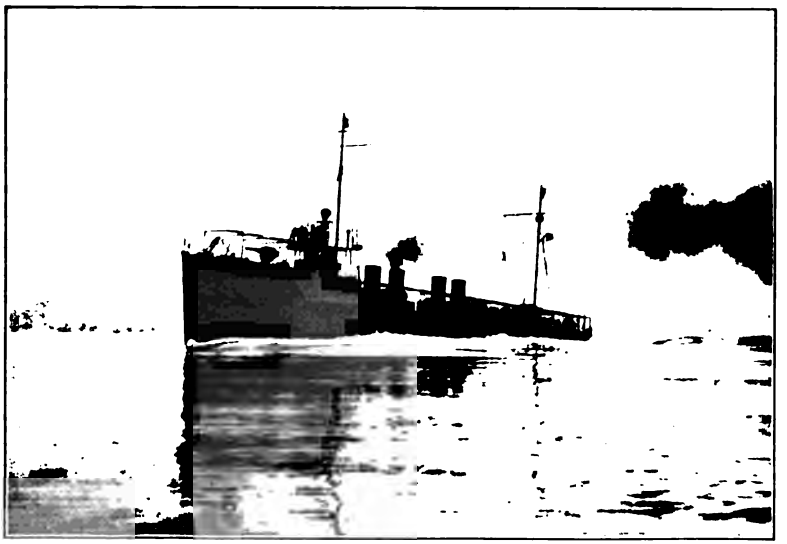
When it was realized that the great speed of torpedo boats and their great facility to maneuver unobserved at night, discharging their deadly torpedoes at close range thus menacing the very existence of gunboat, cruiser, and battleship, naval constructors set about to develop a warship to cope with this new terror of the sea.

The Destroyer was the result. It is a greatly enlarged torpedo vessel with better seagoing qualities, and great speed. Destroyers have four 4-inch guns and four to eight torpedo tubes on deck, the torpedo being the same type and size as used by larger ships. Oil is used as fuel, having a storage capacity of 90,000 gallons. Destroyers serve also as scout ships and have a cruising radius of 6,000 miles. They are equipped with radio communication, and powerful searchlights. The latest design has sloping, flush main deck, doing away with the forecastle. It has cable and apparatus for sweeping channels for mines to clear the way for the fleet. Metal furniture is installed to reduce the quantity of inflammable material aboard. Their displacement is about 1,100 tons, length 310 feet, draft 9 feet, speed 32 knots, cost about $925,000. The complement is 4 officers and 90 men. The ratio of destroyers to battleships is fixed at 4 to 1, but the number provided is only about 2 to 1, being 58 in 1916.

OUR SUBMARINES AND SUBMERSIBLES

It has remained for the present decade to experience the full force and potentiality of submarine warfare. It is remark-

U. S. S. *Utah* in Hudson River

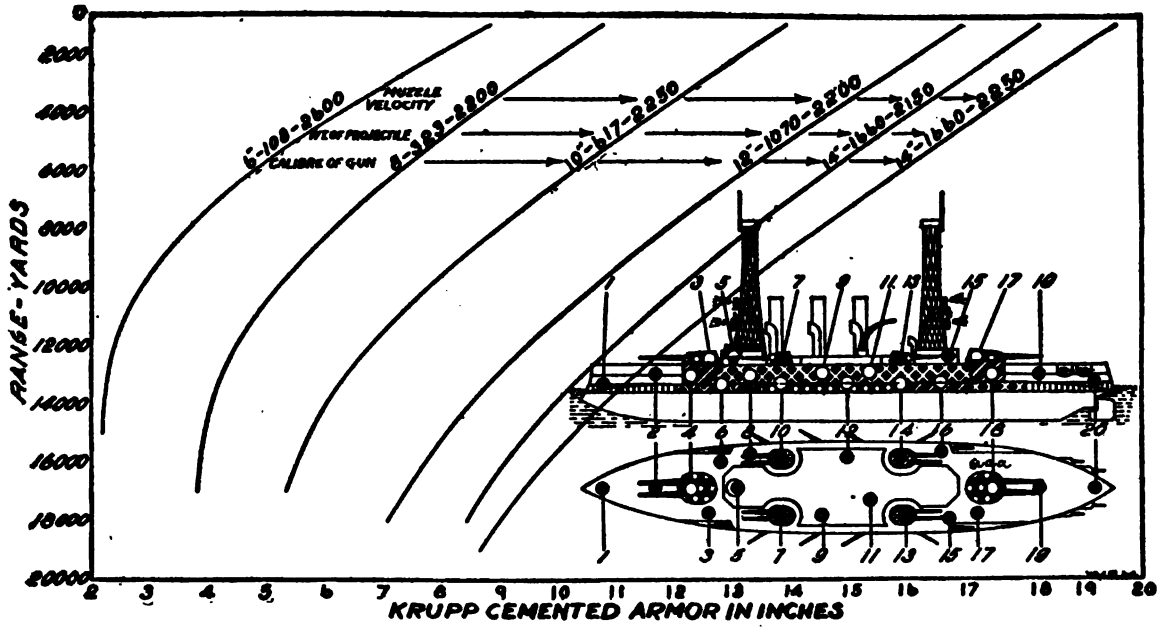


U. S. Destroyer *Reid*

U. S. S. *San Francisco*, Mine Layer

U. S. S. *Wyoming*

Displacement 26,000 tons. Length 550 ft., beam 93½ ft. Maximum draft 28½ ft. Armament 12, 12-inch guns, 50 caliber; 21, 5-inch, 50 caliber; 4, 3 pounders. Torpedo tubes, 2, 21-inch submerged. Armor 11-inch belt (amidships) 5-inch belt (ends) 12-inch turrets; 11-inch turret bases; 6½ in. battery. Parsons' Turbine Engines



Armor Attack Diagram

Showing outline of battleship, and curves showing perforation of projectiles of various calibers in armor at various ranges and muzzle velocities

able that over one hundred years of study, theory, and practical experimentation was necessary to develop the submarine boat to a point of efficiency and standardization meriting its universal adoption by maritime powers as an offensive weapon.

As far back as the War of 1812 is chronicled a successful voyage of a United States submarine boat in search of the British flagship *Ramilles*. During this war a British squadron with the *Ramilles* as flag ship lay at anchor in Long Island Sound unmolested and unharmed for months.

In the meantime an inventor at Norwich, Conn., fourteen miles up the Thames River was working away on a submarine boat in which when complete he voyaged under water at the rate of three miles per hour. "Three times he went under the *Ramilles* and on the third occasion had nearly fastened a torpedo to the ship's bottom when the breaking of a screw baffled the attempt. He was discovered but escaped."

Other attempts were made to destroy the *Ramilles* by torpedoes but only resulted in keeping her constantly on the guard and caused her bottom to be swept every two hours night and day. Finally the inhabitants were warned that if such tactics were not stopped the town of New London would be burned.

Thus ended what appears to be the original chapter of submarine-boat warfare. The torpedo had been successfully used at various places along the Coast in 1812–13, but the practicability of submarine boats was questioned. No doubt the fear of Fulton's torpedoes which the British believed to be in general use at various seaports saved the coast cities from plunder and the torch.

Torpedo warfare received great impetus during the Civil War, various types being developed by both the Confederates and Federals. Dragging for torpedoes and the use of torpedo nets dropped over the sides of vessels were first practised during our Civil War but there appears to have been no use made of submarine boats until the present generation.

Following the evacuation of Richmond in 1865, Captain

Ralph Chandler, United States Navy, organized an expedition consisting of 300 men in several tugs and thirty small boats and cleared the James River of torpedoes that had been planted at various points in the river. In writing his report Captain Chandler summed up the moral effect of the torpedo as follows:

"The knowledge that a simple touch (with a torpedo or submarine mine) will lay your ship a helpless sinking wreck upon the water without even the satisfaction of firing one shot in return calls for more courage than can be expressed and a short cruise among torpedoes (submarine mines) will sober the most intrepid disposition."

The Russo-Jap naval warfare clearly demonstrated that the mobile torpedo used offensively by warships as well as the concealed submarine mines used defensively at harbor entrances were destined to play a most vital and important rôle in future maritime warfare. The present European War at once demonstrated conclusively that a new and most deadly and efficient under-water craft had finally been perfected destined to prove a new element and dominating factor in naval warfare and strategy.

A most forceful demonstration of the offensive use of the torpedo in the present European War was the complete destruction in about twenty minutes of three 12,000-ton British cruisers off Heligoland in September, 1914, by the torpedoes of a single German submarine boat which escaped without injury. This small submarine warship of perhaps five hundred tons displacement representing a cost of perhaps $250,000 and with a crew of perhaps twenty seamen completely destroyed 36,000 tons of the English naval strength manned by 2,100 officers and sailors, fifty per cent of whom lost their lives.

The submersible differs from the submarine only in that it is better designed to cruise about on the surface until sighting the enemy and then submerge and has an armament of small caliber quick-firing guns. The hull of the submarine is cigar-shaped and is built of best quality steel. The workmanship must be of

the very best and all seams and riveting be absolutely watertight under considerable pressure. Large high-capacity storage batteries are provided to supply the motive power for speeds ranging from eight to fifteen knots per hour and for a cruising radius of perhaps 5,000 miles. To pass from the surface to the submerged state valves are opened which permits water to enter huge tanks within the boat, the weight of water causing the boat to sink beneath the surface. The depth of submergence desired is controllable by these valves, the normal depth being such depth as will permit the periscope to remain a few feet above the surface. This periscope can be revolved by the observer in the conning tower who is thus able to observe the movements of vessels within the radius of vision in all directions. To completely submerge the boat it is then only necessary to admit the small amount of water equal to the displacement of the part of the periscope above the surface. While in the submerged condition all communication with the outside atmosphere is necessarily cut off. The crew then must breathe the air contained within the boat which with the reserve supply of compressed air in the steel air tanks is sufficient for several days.

The electric storage batteries which supply power for operating the propellers are also used for running numerous auxiliary motors for pumping, steering, handling torpedoes, etc. The boat is steered by an ordinary type of rudder. Horizontal rudders, operating on the same principle, control the depth. The weapon of the submarine is the torpedo, several of which can be carried. These are fired through torpedo tubes in the bow of the boat.

When Admiral Sampson bottled up the Spanish Squadron in Santiago Bay, Cuba, in 1898, we had no submarine boats. John B. Holland, a naturalized American, had successfully tested his submarine boat, known as the *Holland No.* 9, in Staten Island Sound, on St. Patrick's Day of that year. He offered to enter Santiago Harbor in this submarine and destroy

the Spanish Fleet, which had been there several months. Our Navy Department was skeptical and declined his offer. After more exhaustive tests, the Government purchased this submarine from Mr. Holland, in 1900, paying therefor $150,000. It remained the property of the Government until recently when it was sold to a junk dealer in Philadelphia for $1,007. Mr. Holland is known internationally as the inventor of the modern submarine.

The *Holland No. 9* was only fifty-three feet long, with a 10-foot beam and seventy-five tons displacement. A gas engine provided the propelling power when running on the surface, and an electric motor when running submerged. Her speed was eight knots on the surface and five and one-half knots per hour submerged. She could remain under water a week with her crew of five. We now have a fleet of fifty-eight submarines built and building.

Seamen receive five dollars per month extra for service aboard submarines and one dollar per day additional when submerged.

"Do you realise the task of the navy? Have you ever let your imagination dwell upon the enormous stretch of coast from the Canal to Alaska? from the Canal to the northern corner of Maine? There is no other navy in the world that has to cover so great an area of defense as the American Navy, and it ought in my judgment to be incomparably the greatest navy in the world."—WOODROW WILSON, St. Louis Speech.

See p 185

CHAPTER XXXIX

THE UNITED STATES MARINE CORPS

"OUR MARINES"

"Our flag's unfurled to every breeze,
From dawn to setting sun;
We have fought in every clime and place
Where we could take a gun;
In the snow of far-off Northern lands
And in sunny tropics scenes,
You will find us always on the job—
The United States Marines."

THE United States Marine Corps is the military branch of the United States Navy. Our Marines are the Soldiers of the Sea.

The Marine Corps is the most efficient military unit of our national defense system. As increased by the Act of Congress, July, 1916, it consists of a Major General Commandant, 597 officers and 14,981 enlisted men. Officers of the Marine Corps, in relation to rank and pay, are on the same basis as officers of similar rank in the Army.

The Major General Commandant of the Marine Corps is responsible to the Secretary of the Navy for the general efficiency and discipline of the Corps. He assigns officers and men to shore stations and vessels of the Navy. He has charge of and exercises general supervision over the recruiting service of the Corps.

To promote recruitment a publicity bureau is maintained in New York City for the publication and distribution of literature calculated to encourage enlistments. This bureau is under scientific management resulting in an actual saving of $50,000

per year over the former system and with an improvement in the quality and number of recruits received. More than 750,000 names of prospective candidates for enlistment are on file, although the number of vacancies occurring annually is only about 4,000. This year (1916) 5,000 men in addition must be recruited on account of the increase of the Corps.

So varied are the calls for active service by our marines to meet the needs of our Government in foreign lands and insular possessions, that over fifty per cent. of them are on foreign duty practically at all times. Our marines see more active service than either the Army or Navy. The percentage of reënlistment in the Marine Corps is greater than in the Army or Navy.

The individual duties and routine life of a marine cover a greater variety of technical training than those of a sailor or soldier. These duties include service on board vessels of the

(*a*) Active fleet and on board capital ships now in reserve whenever it becomes necessary for them to join the active fleet.

(*b*) As the technical companies constituting a fixed defense force for seizing, fortifying, and defending advance bases.

(*c*) As a mobile force consisting of infantry and artillery,

(1) As support for the fixed defense forces of advance bases, and

(2) For expeditionary duty such as that performed at Vera Cruz in 1914 and now being performed in Haiti and Santo Domingo.

(*d*) As military garrisons at Navy Yards, Naval Magazines, and other plants both in time of peace and war.

(*e*) As detachments for duty at target ranges, recruit depots, United States legations, naval prisons, and hospitals.

(*f*) As recruiting details and recruit detachments under training.

(*g*) Detachments for administrative purposes.

Service in the Marine Corps offers unusual opportunities for travel and study.

When the commerce of the world centered in the Mediter-

U. S. S. *North Dakota*

Displacement 20,000 tons. Principal armament, 10, 12 inch; 14, 5 in. Secondary armament, 4, 3 pds. S. A.
Torpedo tubes 2, 21 inch. Armor { Belt 11 inches. Big guns 12 inches. Engines—Turbines.

1. U. S. submarine *K 7*. Under way at half speed
2. Naval hydroaeroplane, pilot and observer
3. Naval Aeronautical Station, Pensacola, Florida

ranean Sea centuries before the Christian era, sailing vessels were the common means of transportation. The principle was then and there evolved of increasing the security of the ship and cargo by having on board, in addition to the sailing crew, a trained military force for service on land as well as on deck. These were called "Epibatae." United States Marines are an evolution of this ancient custom and practice.

Our maintenance of the Monroe Doctrine in the revolution-infested group of South Central American Republics and West Indies, stimulates that constant preparedness and proficiency so typical of the United States Marines.

The employment of infantry as part of the force aboard ships of war was common to the Phœnicians and to all the maritime states of Greece at least five centuries before the beginning of the Christian era. Marines are especially mentioned in the account of the battle of Lade, in the time of Darius, King of Persia, about 497 B. C. From those times to the present, it has been recognized that the efficiency and effectiveness of a ship of war is advantageously increased by the addition to the regular ship's force of a body of men whose peculiar training fits them for military service both on land and sea.

At the time of the separation of the thirteen colonies in America from Great Britain, the "American Marine Corps" was formed inheriting the British marine organization and conducted along similar lines.

The United States Marine Corps was first called into existence by an Act of the Continental Congress of November 10, 1775, and gallantly served with distinction throughout the Revolutionary War. It was disbanded at the close of the War, April 11, 1782, but was reorganized and permanently established July 11, 1798. From that day to this its officers and men have been zealous participants in every expedition and action in which the Navy has been engaged and in many trying campaigns they have won distinction with their brethren of the Army. It is the gallant little corps that has so ably as-

sisted in fighting America's battles in every corner of the globe for more than a century; its members are the first men on the ground in case of trouble with a foreign power and the first men into battle in case of hostilities. They have at all times served their country faithfully, both in peace and war, and have reflected great credit upon themselves as a corps and on the Nation which they represent. Ever have they lived up to the letter, as well as the spirit, of the motto of the corps, "*Semper Fidelis.*"

They are trained, clothed, and equipped very much as soldiers of the land forces. In their preliminary instruction on shore, they are instructed and drilled in the duties of infantry soldiers, field artillerymen, and as machine-gun companies. In preparation for their duties as landing parties from ships of the Navy, for expeditionary duty and as defenders of naval advance bases, they are further trained in the use of portable searchlights, the radio telegraph, the heliograph, and the various methods of signaling, range finders, the erection and operation and maintenance of telegraph and telephone lines, the planting of land and submarine mines, the handling of torpedoes, the erection and demolition of bridges, the building of roads, knotting and splicing, the handling of heavy weights, the use of pulleys, the fitting of gun gear, the various methods of slinging and transporting ordnance and the mounting in suitable shore positions of ship's guns of three, five, and six inch caliber and the management of the fire control systems connected therewith; the manning of aero defense batteries.

Great mobility and facilities for quick action are required of the Marines. They must be kept in readiness to move at a moment's notice without any previous warning and be prepared for service in any climate. Our Marines have seen service in Egypt, Algiers, Tripoli, Mexico, China, Japan, Corea, Cuba, Porto Rico, Panama, Nicaragua, Santo Domingo, in the Islands of Formosa, Sumatra, Hawaii, and the Philippines. They have always been in the front rank of America's Defenders.

Marines now serve at the following navy yards and stations:

Boston, Massachusetts
Hingham, Massachusetts
Portsmouth New Hampshire
New York, New York
Iona Island, New York
Dover, New Jersey
Philadelphia, Pennsylvania
Indian Head, Md.
Washington, D. C.
Annapolis, Maryland
Norfolk, Virginia
Charleston, South Carolina
New Orleans, Louisiana
San Diego, California
Key West, Florida
Guantanamo, Cuba
Managua, Nicaragua
Puget Sound, Washington
Mare Island, Cal. (near SF).
Honolulu, Hawaiian Islands
Winthrop, Md.
Guam, Marianna Islands
Cavite, Philippine Islands
Olongopa, Philippine Islands
Peking, China
Port Royal, South Carolina
Pensacola, Florida

In their service on battleships and first-class cruisers the Marines form a part of the ship's complement for battle, manning the seven inch, six inch, five inch, three inch, and six pounder guns of the intermediate and secondary batteries. They are trained and fully equipped for instant service as landing parties.

Well-equipped gymnasiums, libraries, reading rooms, amusement rooms, bowling alleys, tennis courts, baseball, and football outfits are provided at all of the larger barracks for the amusement and entertainment of the men.

Special attention and encouragement are given to athletic sports of all kinds, both in the gymnasium and out of doors; boxing matches, competitions, and meets are arranged and prizes offered for those who excel in the games and tests. This is done to encourage the men to take an active interest in athletics and physical culture, with the realization and appreciation of the fact that doing so the men improve themselves physically, making more desirable and capable soldiers and better and healthier citizens when they shall have completed their term of service and returned to their homes to engage in the pursuit of civil life.

The Marine Corps baseball and football teams of the various barracks often participate in competitions with other military teams of their own and neighboring cities. In some cases they play in the semi-professional baseball leagues. Dances, carnivals, amateur theatricals, moving picture and minstrel shows are frequently arranged for the enjoyment of the men.

I cannot do better in portraying the life of our Marines than to take advantage of permission granted by Major General George Barnett, Commandant, to quote at length from the official booklet depicting this service:

"'The Marines have landed and have the situation well in hand.' How frequently do we see this headline in the morning paper over a press dispatch from some distant land or remote island. Yet how few of us fully understand the significance conveyed in those few words; how few of us know who these Marines are who 'have the situation well in hand.' It conjures up the mysteries of the sea, and of strange lands and stranger peoples far out of the scope of our individual sphere of observation or acquaintance, for the average American citizen has but a vague idea who the Marines are, where they go, what they do, their characteristics, duties, and dress. Somewhere in his mind is stored away the impression that a Marine is some kind of amphibious warrior of the sailor type, wearing sailor clothes, and whose habitat is in that part of the world where the most trouble is brewing. At all events he looks upon the Marine as being a man who is thoroughly onto his job and lets it go at that.

"By the time a Marine has served his enlistment of four years and returns to his home he may have encircled the globe and visited many foreign countries. He comes back a healthier, more self-reliant, and better man in every respect. The experience that he has enjoyed amounts to a liberal education in itself and should he have acquitted himself creditably he may have earned promotion, for in our constantly increasing Marine Corps promotion is correspondingly rapid and a young

man possessing the necessary qualifications may climb to the top of the ladder. Since the Spanish American War thirty-three young men have been commissioned from the ranks of the Marine Corps as Second Lieutenants, receiving further promotion in their turn. One has already attained the rank of Major. It is not desired, however, to create the impression that promotion from the ranks to commissioned grade is easily attained for only men possessing exceptional qualifications are so promoted.

"Very rarely indeed does one meet a man whose makeup does not include to a greater or less degree the desire for adventure and to whom the possibility of travel especially to foreign countries does not appeal. It is only natural and human. No matter how fond one may be of home and its environments, the spirit of and desire for travel and adventure is deeply rooted in his nature and few there are who can resist the temptation whenever the opportunity offers itself.

"Especially is this fact true with relation to foreign travel. In order to see foreign lands and strange peoples one must need cross the great oceans. The sea possesses an enchanting and enduring fascination for the landsman accustomed to the quiet and prosaic life of the office, factory, or farm. To travel by sea from port to port, from country to country, from ocean to ocean, amid ever-changing scenery and climatic conditions, to see and study the habits and customs of the strange races of mankind, are and always will be among the highest ambitions of the average man. In time of war the hardships are many. Forced marches, exposure to all kinds of weather, uncomfortable sleeping accommodations, loss of sleep and insufficient food and water. But the hardships of war are unavoidable and must be expected.

"A man who serves an enlistment in any branch of the military or naval service performs a patriotic duty and is in a position to perform invaluable service to his country in case of public emergency. Completing his enlistment he goes back to civil

life possessed of a military training which he never forgets and if afterward there should be a call to arms for the defense of his country he would be prepared to step into a higher position and perform more efficient and creditable service than would be the case had he not had the advantage of the previous training and schooling in the art of warfare. If happily during his life time there should be no war, he would at least have the satisfaction of having performed his share of the military duty of his country."

Marines are given a twelve weeks' theoretical and practical training before being taken up for routine duty. The first ten weeks are devoted to the study and practice of the following subjects:

Care of clothing and person
Military courtesies
School of the recruit
Physical drill with and without arms
Carrying messages
Nomenclature of the rifle
Manual of arms
Bayonet exercise
Squad and company drill
Packing knapsacks and blanket rolls
Patrolling
Guard duty
Signaling
Street riot drill
Artillery drill
Wall scaling
Pitching tents
Field fortifications
Extended order, advance and rear guard
Athletics
Boxing
Swimming
Individual cooking
First aid to the injured
Handling boats

Two weeks are devoted entirely to target practice on the range with the service rifle. Every effort is made to qualify the men as marksmen, sharpshooters, and expert riflemen which not only gives them an increase in pay but makes them more valuable to the service. The success of these efforts is evidenced by the fact that the National Team Match (the biggest, greatest, and most keenly contested rifle match held in the United States) was won by the Marine Corps team in 1911 against all the teams

Sergeant of Marines fully equipped for field service

Inspection of Marines in heavy marching order

Marine Guard, Pekin, China, rendering honors to a Chinese dignitary

of the other branches of the regular service and the militia of the different states and territories, forty-two in all. It won second place in this match in 1915, losing to the United States Infantry team by three points in 3,600 points. The "President's Match," which is open to individual members of the Army, Navy, Marine Corps, Military Academy, Naval Academy, Organized Militia, and the National Rifle Association of America and affiliated clubs, was won in 1910 by Sergeant Fragner, M. C.; in 1911 by Corporal Lloyd, M. C. against 480 contestants. In 1915 the Marine Corps won second place in the international match at Jacksonville, Fla.

In the annual target practice training for 1915 about twenty-five per cent. of the entire enlisted strength of the Marine Corps qualified as marksmen, sharpshooters, or expert riflemen. In one company composed of eighty-one recruits of less than four months' training ninety-four per cent. qualified as marksmen or better.

The Marine Corps has taken up aviation and has already qualified several flyers.

Each year since the war with Spain the Marine Corps has been called upon to furnish mobile forces for expeditionary duty. These forces have varied in size from a battalion to a brigade of over 3,000 men.

During the last five years brigades of marines have been engaged in foreign expeditionary duty on six different occasions. Each of these brigades has been commanded by a Colonel, for the reason that there were no Brigadier Generals in the Marine Corps.

"From the Halls of Montezuma,
To the shores of Tripoli,
We fight our country's battles
On the land as on the sea;
Admiration of the Nation,
We are the finest ever seen,
And we glory in the title of
United States Marines."

CHAPTER XL

THE UNITED STATES COAST GUARD

THE REVENUE CUTTER AND LIFE SAVING SERVICE OF THE TREASURY DEPARTMENT

A NEW element of the National Defense System was established January 28, 1915, by the act of Congress consolidating the Revenue Cutter Service and the Life Saving Service of the Treasury Department into the United States Coast Guard, designating it as a part of the military forces of the Government, and directing the President to place it under control of the Secretary of the Navy in time of war or national emergency. Its organization, equipment, and training as far as practicable, conform to those of the Navy standards.

The Coast Guard is administered by a Commandant, Captain Ellsworth P. Bertholf. There are 255 commissioned officers and 3,886 warrant officers, petty officers, and enlisted men. The officers are educated at the Coast Guard Academy, New London, Conn., and upon graduation are commissioned third lieutenants. This Academy gives three years of scientific, technical, and practical training under rules and regulations similar to those governing the Military and Naval Academies, as to appointments, examinations, pay and allowances, discipline, etc.

The Revenue Cutter Service was founded in 1790 to enforce the customs laws and to serve as an organized armed force for the protection of the sea coast, there being at that time no Naval Establishment. It has participated in every war on the seas in which our nation has been involved.

The Life Saving Service was established in 1871 for the special service of saving life and property along the coast.

The equipment of the Coast Guard consists of twenty-four cruising cutters and eighteen harbor cutters and launches, located at various seaports and Great Lake ports of the United States proper, Porto Rico, and the Hawaiian Islands. The cruising cutters are of about 1,000 tons displacement. Each is armed with from two to four 6-pound rapid-fire guns. These guns are primarily for war service, but in times of peace are used for the purpose of shooting lines to vessels in distress. There are 280 Coast Guard stations and houses of refuge. Each of these stations is provided with line-projecting guns, hawsers, breeches buoys, and flag and pyrotechnic signals, heaving sticks and lines, life preservers, life cars, lifeboats, surf boats, and other types of boats, all of which are necessary for the preservation of life and property from the elements. Additional Coast Guard cutters are desired for use on the Ohio and Mississippi rivers and their tributaries, primarily to aid sufferers from floods.

The duties of the Coast Guard embrace almost every maritime function which the Government is called upon to perform for the people and include:

1. Rendering assistance to vessels in distress and saving life and property.
2. Destruction or removal of wrecks, derelicts, and other floating dangers to navigation.
3. Extending medical aid to United States vessels engaged in deep-sea fisheries.
4. Protection of the customs revenue.
5. Operating as a part of the Navy in time of war or when the President shall direct.
6. Enforcement of law and regulations governing anchorage of vessels in navigable waters.
7. Enforcement of law relating to quarantine and neutrality.
8. Suppression of mutinies on merchant vessels.

9. Enforcement of navigation and other laws governing merchant vessels and motor boats.

10. Enforcement of law to provide for safety of life on navigable water during regattas and marine parades.

11. Protection of game and the seal and other fisheries in Alaska, etc.

12. Enforcement of sponge-fishing law.

13. Patrolling ice fields of the North Atlantic to warn vessels from danger of icebergs.

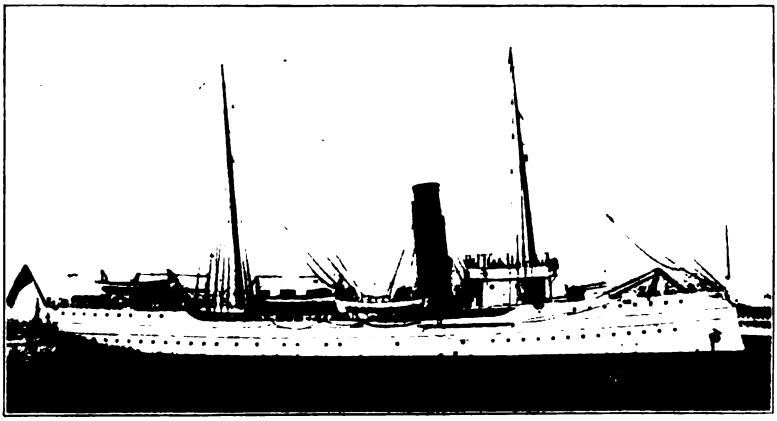
During all periods of the year and at such times as least to interfere with emergent duties of a civil nature a rigid system of military discipline and training is maintained to fit the personnel of the Coast Guard for the duty of operating as a part of the Navy at any time, as the law requires. Upon the outbreak of war it automatically becomes a portion of the Navy and has always been found in a state of preparedness when called upon for strictly military duty. During the winter season on the Atlantic Coast a constant patrol of the entire coast is maintained from Maine to Florida by a cordon of cutters which cruise actively during the inclement weather. At all hours of the day or night beaches between stations are patrolled by the surfmen, watching out for vessels which may become stranded or which approach too close to the shore, or dangerous shoals or reefs.

The total annual appropriation for the Coast Guard is about five million dollars. The services rendered in 1915 were as follows:

Lives saved or persons rescued from peril	1,507
Persons on board vessels assisted	10,052
Persons in distress cared for	813
Vessels boarded and papers examined	24,817
Vessels seized or reported for violation of law	772
Fines and penalties incurred by vessels reported	$220,500
Regattas and marine parades patrolled in accordance with law	37
Vessels to which assistance was rendered	1,504
Instances of miscellaneous assistance	556
Derelicts and obstructions to navigation removed or destroyed	26
Value of vessels assisted (including cargoes)	$10,927,730
Value of derelicts recovered and delivered to owners	161,000

Bunks and individual equipment of U. S. Marines arranged for monthly inspection

U. S. Marines are quartered in large, commodious barracks with accommodations for a battalion of two to four companies



The *Mohawk*, a Revenue cutter

Copyright by Harris & Ewing

Trophy presented annually by direction of the President of the United States to the most efficient vessel in her class in naval engineering

The miscellaneous duties consist of warnings to vessels running into danger, medical and surgical aid to the sick and injured, recovery and burial of bodies cast up by the waters, extinguishing of fires on wharves, vessels, dwellings, and business structures, fighting forest fires, coöperating with local authorities in the maintenance of public order, apprehending of thieves and other law-breakers, preventing suicides, restoring lost children to their parents, recovering stolen property, and salving miscellaneous articles from danger or destruction, acting as pilots, furnishing food, water, and fuel to vessels in distress, protecting wrecked property, furnishing transportation and assistance to other branches of the public service, etc. Such instances of aid furnished average about six a day.

Military discipline prevails at all times, and on board the vessels of the Coast Guard a regular naval routine is conducted. The uniforms of the officers and men afloat are substantially like those of the regular naval service. The crews of all the cutters are furnished with and drilled in the use of the Army-Navy standard rifle.

Two of the cutters are detailed annually to search for and report the positions of icebergs and fields approaching the North Atlantic steamship routes during the months of March, April, May, and June. This patrol, known as the International patrol, was instituted immediately after the loss of the *Titanic*, and has been continued each year since that lamentable accident. It is considered of such importance that all of the leading maritime nations of the world share with the United States the expense of this patrol.

In times when our shores are threatened with the ravages of epidemics or plagues from foreign countries, Coast Guard cutters are called upon to enforce quarantine regulations.

Mutinies on the high sea are not infrequent, even in these days, and cutters are occasionally called upon by merchant vessels to aid their masters in suppressing outbreaks of this kind among the crews.

CHAPTER XLI

RIFLE PRACTICE—THE NATIONAL RIFLE ASSOCIATION OF AMERICA

PREPARATION for the defense of one's country is the highest type of patriotism. The best individual preparation is ability to handle the army rifle, shoot accurately, deliberately and with confidence.

To this end, Americans early in life should be trained in rifle practice or musketry at various ranges and under varying conditions of terrain, temperature, wind, and weather.

Until the passage of a national training school act for citizen cadet corps and citizen army such as is provided for in Senate bill 1695 by Senator Chamberlain of Oregon, Chairman of the Senate Military Committee, this can best be accomplished by membership in the National Rifle Association of America which was incorporated in 1871 by patriotic citizens.

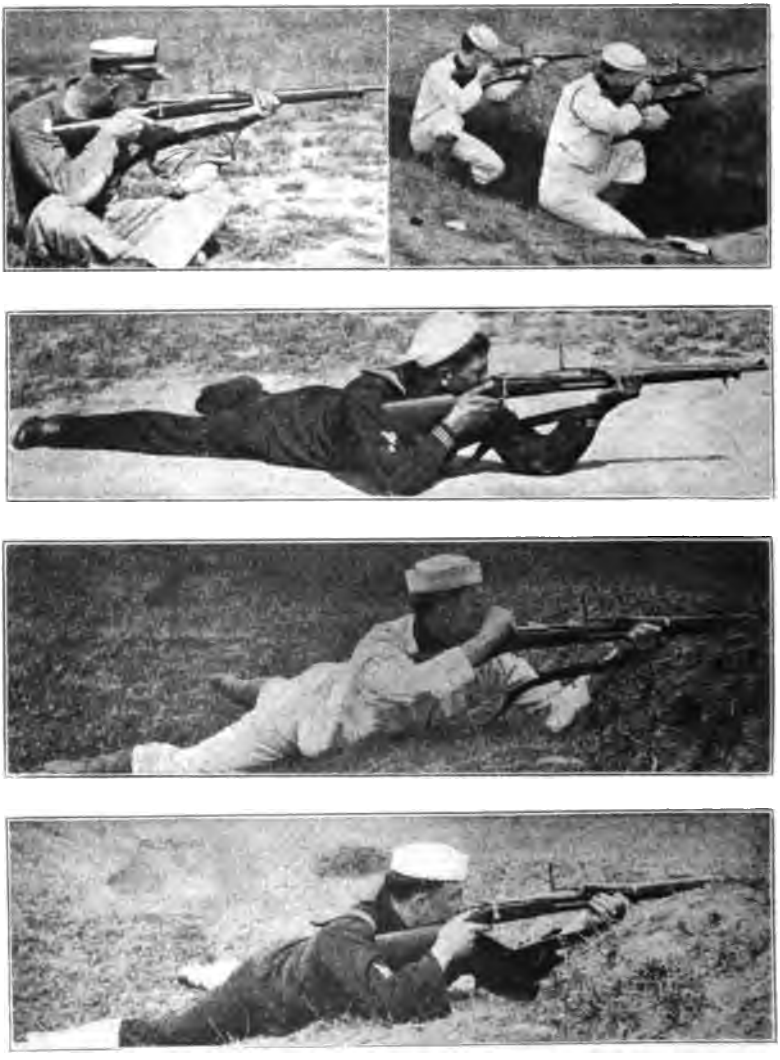
Membership

Benefactors—To whom shall be issued on payment of $1,000 a certificate entitling the holder or his nominee to membership in the Association in perpetuity.

Patrons—To whom shall be issued on payment of $500 a certificate entitling him and the male members of his immediate family to membership in the Association during the life of said patron.

Life Members—Who shall, upon the payment of $25, be entitled to membership during life.

National Trophy Plaque competed for annually by Army, Navy, Marine Corps, National Guard, and Military colleges



Sitting, kneeling, and prone firing positions

Annual Membership—Any citizen of the United States may become a member of the Association annually upon payment of $2.

Affiliated Membership—Any Rifle Club or Association, Corps, Regiment, Battalion, Squadron, Battery, Troop or Company unit of the Army, Organized Militia and equivalent Navy and Naval Militia organizations may affiliate with the Association upon payment of the following membership fee and dues:

First Class: State Associations: Fifteen Dollars membership fee and Fifteen Dollars annual dues; membership fee to cover first year's dues.

Second Class: Regiments or Corps consisting of more than four companies of the Army, Organized Militia, and equivalent Navy and Naval Militia organizations: Ten Dollars membership fee and Ten Dollars annual dues; membership fee to cover first year's dues.

Third Class: Rifle Clubs (other than State Associations) Battalions, Squadrons, Batteries, Troops, and Company Units of the Army, Organized Militia and equivalent Navy and Naval Militia organizations: Ten Dollars membership fee and Five Dollars annual dues; membership fee to cover first year's dues.

Fourth Class: College Rifle Clubs, to consist of rifle clubs composed, so far as shooting members are concerned, of students in colleges, universities, and institutions of learning conferring degrees: Five Dollars membership fee and Five Dollars dues; membership fee to cover first year's dues.

Fifth Class: School Boys' Clubs, to consist of rifle clubs composed, so far as shooting members are concerned, of students in any public or private school which does not confer a degree: Two Dollars membership fee and Two Dollars annual dues; membership fee to cover first year's dues.

Sixth Class: Boys' Clubs, other than school clubs, to consist of boys between the ages of nine and eighteen: Two Dollars membership fee and Two Dollars annual dues; membership fee to cover first year's dues.

Clubs of the third, fourth, fifth, and sixth class must consist of not less than 10 members.

The object of this Association is to encourage marksmanship throughout the United States, particularly in the direction of qualifying as finished marksmen those individuals who may be called upon to serve in time of war; to encourage competition in marksmanship between teams and individuals; to encourage legislation for the establishment and maintenance of ranges; to secure the issue of military rifles and ammunition to those practising on these ranges, and to create a public sentiment in respect to the necessity of rifle practice as a means of national defence.

The first recognition by Congress of the work of the N. R. A., was in 1902, by the appropriation of $2,500 and the creation of The National Board for the Promotion of Rifle Practice in the United States. By Act of Congress, March 3, 1903, a National Trophy was provided as a first prize for a National Team Match. The N. R. A. is the official organ of the National Board for the Promotion of Rifle Practice in the United States. The Assistant Secretary of War is President of this Board.

So great (over one hundred per cent.) has been the increase in membership the past twelve months and the interest manifested in all parts of the country that the Military Committees have included an item of $300,000 for target range equipment and ammunition for the clubs of this association for fiscal year, 1917, and which provides that an officer be detailed as Director of Civilian Rifle Practice, and to whom the rank and pay of Colonel is given.

This assures a very active season. The limited appropriations heretofore have not permitted of extensive training or organization such as will now be possible.

In the District of Columbia over fifty rifle clubs have been organized principally in the various governmental departments. A schedule of events and competitions is conducted at the Marine Corps range at Winthrop, Md. for Saturdays and holi-

days, but the entire expenses of food and transportation must be met by the individual members. The total number of clubs in the United States is rapidly reaching the 1,100 mark (see map). At the close of 1915 the membership was as follows:

CLUBS, ETC.	MEMBERS
23 State Associations	
63 Regiments	
47 Separate Military Organizations	
639 Civilian Rifle	26,212
64 College and University	3,353
87 High Schools	2,788
10 Private Preparatory Schools	867
32 Military Schools	2,106
9 Boys' Clubs and Boy Scouts	139
549 Life Members	549
943 Annual Members	943

A great many clubs, rather than go to the expense and trouble of giving a bond for the free issue, purchased their own rifles. *One club in the District of Columbia with* 65 *members acquired about* 50 *new Springfield rifles by purchase of its members and many other clubs have done the same,* wishing to own rifles rather than to take advantage of the free issue. Two hundred *and seventy-five* of these clubs took advantage of the free issue and were issued 2,038 rifles during the year. *There has been issued to clubs by the Ordnance Department* 1,000,635 *cartridges. To thirty school clubs there has been issued* 1,445 *rifles,* 1,223 *carbines. and* 198,360 *cartridges.*

The course of rifle firing as laid down by the War Department is followed as far as practicable, but a great many clubs are unable to get the longer ranges. During the year 1915 the clubs qualified under the Militia Course 817 experts, 606 sharpshooters, and 702 marksmen. The best record was by the Fort Pitt Rifle Club of Pittsburgh which qualified 22 experts and 1 sharpshooter. The Los Angeles Rifle and Revolver Club qualified the second largest number, 20 experts and 1 sharpshooter, and the Rocky Mountain Rifle Club of Butte, Montana, was third with 20 experts.

The national team match brings together the best rifle shots of the United States and has grown to be a most important military event since teams are entered from the Mobile Army, the Navy, Marines, National Guard, District of Columbia, and Colleges. This trophy was won three years in succession by the New York National Guard; four years by the Infantry team United States Army, once by the Navy, Cavalry, and Marine Corps, the latter losing the 1915 match to the United States Infantry by 3 points in a total of 3,646 points.

The 1916 match will be held at Jacksonville Florida, beginning October 20th.

The trophy, a handsome bronze plaque, 27 inches wide by 48 inches high, is the most coveted rifle shooting team trophy, and is held by the winning organization one year or until the next competition. Having been won by the United States of America Infantry team in 1915, it is now on exhibition in the corridor of the War Department Building and is one of the objects of interest to visitors.

TABLE I.—LIST OF TEAMS REPRESENTING THE UNITED STATES ARMY, UNITED STATES MARINE CORPS, THE ORGANIZED MILITIA OF THE SEVERAL STATES AND TERRITORIES AND THE DISTRICT OF COLUMBIA, AND COLLEGES IN THE NATIONAL MATCHES OF 1915, WITH AGGREGATE SCORES, IN ORDER OF STANDING.

CLASS A.

1.	United States Army Infantry	3,646
2.	United States Marine Corps	3,643
3.	United States Army Cavalry	3,598
4.	Massachusetts	3,587
5.	Oregon	3,574
6.	Wisconsin	3,567
7.	New York	3,566
8.	Pennsylvania	3,563
9.	Minnesota	3,562
10.	Kansas	3,560
11.	Illinois	3,559
12.	Wyoming	3,540
13.	Maryland	3,527
14.	West Virginia	3,526
15.	Indiana	3,525

CLASS B.

16.	Florida	3,520
17.	Ohio	3,518
18.	Kentucky	3,518
19.	Iowa	3,508
20.	North Carolina	3,498
21.	New Mexico	3,497
22.	Arizona	3,495
23.	New Jersey	3,495
24.	Vermont	3,493
25.	Tennessee	3,487
26.	Hawaii	3,486
27.	District of Columbia	3,484
28.	New Hampshire	3,474
29.	Utah	3,465
30.	Alabama	3,445

CLASS C.

31.	Arkansas	3,444
32.	Georgia	3,436
33.	Oklahoma	3,420
34.	Rhode Island	3,412
35.	Colorado	3,400
36.	Connecticut	3,399
37.	Maine	3,398
38.	South Carolina	3,382
39.	Montana	3,377
40.	Missouri	3,373
41.	North Dakota	3,327
42.	Louisiana	3,297
43.	Delaware	3,289
44.	South Carolina Military Academy Cadets	3,124

In addition to numerous inter-club and State matches, preliminary to the national matches there are held the Inter-Club (State) Gallery Competition.

The Inter-Collegiate Gallery Competition. The Inter-Military School Gallery Competition. The Inter-High School Gallery Competition.

The indoor inter-collegiate matches for 1916 were won by the Michigan Agricultural College Rifle Club. The University of Michigan Rifle Club won class "B" medals and the special prize for the non-military college making the highest score in the matches. Columbia University was the winner in class "C" matches. The "Astor Cup" match was won by the Iowa City High School Rifle Club. The St. Johns Military Academy, Delafield, Wisconsin, won second place in that match. There were twenty-nine entries.

The first inter-club match of the District of Columbia Rifle Association was held on the Marine Corps Rifle range at Winthrop, Maryland, May 20, 1916. Forty-two teams of four shooters each participated.

Outdoor small-arms shooting is becoming popular with all rifle clubs. With the idea of encouraging group shooting the N. R. A. will include a match for groups of shooters.

In the Army reorganization bill approved June 3, 1916, rifle practice is encouraged and advanced by a section requiring the Secretary of War to annually submit to Congress recommendations and estimates for the establishment and maintenance of indoor and outdoor rifle ranges under such a comprehensive plan as will ultimately result in providing adequate facilities for rifle practice in all sections of the country. All such ranges are to be open for use by those in any branch of the military or naval service and by all able-bodied males capable of bearing arms. The President is authorized to detail capable officers and non-commissioned officers to duty at such ranges as instructors, for the purpose of training these citizenry in the use of the military arm.

NATIONAL INDIVIDUAL MATCH

Order of merit	Successful competitors	200 yards rapid fire	300 yards rapid fire	300 yards slow fire	600 yards slow fire	1,000 yards slow fire	Aggregate
1	James S. Stewart, sergeant, 1st Corps of Cadets, Massachusetts (gold medal and $60 cash)	49	50	74	71	71	315
2	Theodore B. Crawley, private, United States Marine Corps (gold medal and $55 cash)	48	50	70	73	74	315
3	Steve W. Pearson, private, 4th Company Coast Artillery Corps, Oregon National Guard (gold medal and $50 cash)	49	49	70	75	71	314
4	Walter M. Randle, private, United States Marine Corps (gold medal and $45 cash)	50	50	70	73	70	313
5	Basil Otey, battalion sergeant major, 3d Wyoming Infantry (gold medal and $40 cash)	50	49	74	73	67	313
6	Archie Farquharson, sergeant, United States Marine Corps (gold medal and $35 cash)	49	49	70	71	73	312
7	Guy H. Emerson, captain, 6th Ohio Infantry (gold medal and $30 cash)	48	49	71	72	72	312
8	Claude H. Clyde, gunnery sergeant, United States Marine Corps (gold medal and $25 cash)	50	50	70	74	67	311
9	Charles K. Duce, captain, 4th Maryland Infantry (gold medal and $20 cash)	49	50	72	72	68	311
10	Stanley Smith, sergeant, Company E, 22d United States Infantry (gold medal and $15 cash)	50	49	71	69	72	311
11	Ollie M. Schriver, gunnery sergeant, United States Marine Corps (gold medal and $10 cash)	49	48	70	74	70	311
12	George S. Kase, sergeant, United States Marine Corps (gold medal and $5 cash)	50	50	71	71	68	310
13	Elmer V. Wooten, quartermaster sergeant, Company B. 3d Oregon Infantry (silver medal and $10 cash)	50	50	70	72	68	310
14	James F. Coppedge, corporal, United States Marine Corps (silver medal and $10 cash)	50	50	70	69	71	310
15	Albert Feiss, 1st sergeant, Troop M, 3d United States Cavalry (silver medal and $10 cash)	49	50	68	70	73	310
16	Clarence K. LaMotte, captain, 19th United States Infantry (silver medal and $10 cash)	49	50	74	70	67	310
17	Gustave Schwandt, 1st lieutenant, 2d Wisconsin Infantry (silver medal and $10 cash)	49	50	69	73	69	310
18	Loren M. Felt, sergeant, Company L, 2d Illinois Infantry (silver medal and $10 cash)	50	49	72	69	70	310
19	Einar L. Bruce, sergeant, Company G, 1st Minnesota Infantry (silver medal and $10 cash)	49	49	67	73	72	310
20	Emmett W. Eddy, captain, 8th Ohio Infantry (silver medal and $10 cash)	50	50	72	70	67	309
21	William Hopkins, private, Company E, 1st Ohio Infantry (silver medal and $10 cash)	49	49	69	70	72	309
22	Harry D. Powell, sergeant, Company C, 1st Minnesota Infantry (silver medal and $10 cash)	50	48	69	71	71	309
23	Guy N. Walling, 1st lieutenant, 1st Kansas Infantry (silver medal and $10 cash)	47	50	69	74	69	309
24	Walter Leudtke, 1st sergeant, 1st Wisconsin Infantry (silver medal and $10 cash)	50	50	69	71	68	308
25	William H. Rupertus, 2d lieutenant, United States Marine Corps (bronze medal and $5 cash)	49	50	67	71	71	308
26	James Ho, 1st sergeant, Company F, 1st Hawaii Infantry (bronze medal and $5 cash)	49	50	70	73	66	308
27	Louis Fields, quartermaster sergeant, Company I, 8th Massachusetts Infantry (bronze medal and $5 cash)	49	50	68	72	69	308
28	Cornelius L. Burdette, captain, Quartermaster Corps, West Virginia (bronze medal and $5 cash)	50	49	69	70	70	308
29	John V. Clinnin, major, 1st Illinois Infantry (bronze medal and $5 cash)	49	49	70	71	69	308
30	Ralph N. Henshaw, corporal, United States Marine Corps (bronze medal and $5 cash)	47	50	72	71	68	308

31	Edwin A. Vola, sergeant, Company F, 13th Pennsylvania Infantry (bronze medal and $5 cash)	50	47	69	71	71	308
32	Fred S. Hird, captain, 3d Iowa Infantry (bronze medal and $5 cash)	47	49	69	73	70	308
33	Wesley H. Woods, corporal, Company B, 2d Maine Infantry (bronze medal and $5 cash)	47	49	69	74	69	308
34	Court W. Burnett, battalion sergeant major, 1st Ohio Infantry (bronze medal and $5 cash)	49	46	71	72	70	308
35	Joseph T. Lawless, color sergeant, 9th Massachusetts Infantry (bronze medal and $5 cash)	47	47	72	73	69	308
36	Orville O. Stevens, 2d lieutenant, 3d Oregon Infantry (bronze medal and $5 cash)	50	50	70	69	68	307

SPECIAL PRIZES.—Gold medal and cash prize of $20 to the competitor making the highest aggregate score in slow fire. Won by Theodore B. Crawley, private, United States Marine Corps. Score, 217 out of possible 225.

Gold medal and cash prize of $20 to the competitor making the highest aggregate score in rapid fire. Won by Joseph Jackson, gunnery sergeant, United States Marine Corps. Score, 100 out of a possible 100; and nine subsequent possible scores.

A cash prize of $5 to each of those winning places 37 to 100 inclusive.

NAVY SMALL ARMS FIRING

Year	Number of vessels that reported	Number of men that were required to fire on vessels that reported	Number of men who completed prescribedcourses or fired on range	Percentage of men who completed course or fired on range to those required to fire	Marksmen	Sharpshooters	Experts
*1915	68		11,850		8,925	3,433	1,515
1914	54	11,393	9,247	81.16	1,794	123	212
1913	44	10,057	8,562	85.13	2,120	79	57
1912	40	10,733	7,888	73.49	1,587	50	76
1911	39	13,465	12,141	90.67	1,906	129	235

*Courses and requirements for qualifications were changed in 1915.

To promote proficiency in marksmanship in the Mobile Army, the Navy, the Marine Corps, schools of musketry are maintained and additional monthly pay is authorized (except in the Navy) as follows:

As marksman, $2—$3—$5.

As sharpshooter, $3.

As expert rifleman, $5.

Except through the International Team Matches of the National Rifle Association, there is no accurate method of comparing the relative proficiency in marksmanship between these arms of the national defense system.

We have in our services a universal small-arms rifle and ammunition. The Army .30 caliber magazine rifle manufactured by the Ordnance Department is issued to all elements of our National Defense System: soldier, sailor, marine, national guardsman, West Point and Annapolis cadets, coast guard, rifle clubs, military colleges, and camps of instruction. There are nearly one million of these serviceable rifles. The allowance of ammunition is liberal and target ranges quite numerous. Conditions now are most favorable for the rapid development of that keen rivalry through friendly competition which makes for military proficiency and preparedness.

It would appear practicable, therefore, to undertake to further promote proficiency in rifle practice through the rivalry certain to follow by requiring all elements to shoot the same courses under uniform regulations and conditions as far as practicable.

MUSKETRY IN THE ARMY

The United States Army was unable to conduct annual competitions in 1915 except in the Philippine Division, due to the extensive border duty.

The numbers of qualifications in the several organizations of the line of the Army in the grades of expert rifleman, sharpshooter, and marksman, and expert pistol shot, since 1909, are shown in the following table:

Grades.	Years.					
	1909	1910	1911	1912	1913	1914
Expert riflemen	2,875	2,151	1,211	1,312	1,627	2,180
Sharpshooters	9,790	8,857	7,326	9,323	11,144	8,236
Marksmen	5,815	5,741	5,196	6,307	7,121	12,423
Expert revolver shot	0	810	1,050	1,335	1,412	981

The Army School of Musketry, Fort Sill, Oklahoma, gives to officers and specially selected enlisted men a three-months' course of training in individual and collective fire, including combat firing and the proficiency test.

In the Army a man has only one chance each year to qualify, whereas in the Navy and Marine Corps an individual may have several chances to qualify.

Estimating the number of candidates for marksmen in the Army in 1914 to be 100,000 would indicate that the Army is qualifying only about twenty-three per cent. of its enlisted men as marksmen.

MUSKETRY IN THE NAVY

In the Navy the 1915 reports indicate that very close attention is being paid to this vital factor of individual proficiency. Fleet trophies, squadron prizes, and ship matches are indulged in throughout the year. When in foreign waters matches are occasionally held with teams from foreign navies. The Auckland Cup was presented by the citizens of Auckland, Australia, on the occasion of a match there between a United States Navy team and the team of the Auckland District Volunteers. The Argentine-American Naval trophy put up by the Argentine Navy and won by it from the United States Navy at Camp Perry, Ohio, in 1913, will be competed for again whenever an Argentine man-of-war and a United States man-of-war are in the same waters of one of the two nations.

The Fleet trophies for 1915 were awarded as follows:

Atlantic Fleet Trophy to the *Dolphin*.

Pacific Fleet Trophy to the *Yorktown*.

Asiatic Fleet Trophy to the *Quiros*.

After June 30, 1916, these three silver cups will be awarded —one in the Atlantic Fleet, one in the Pacific Fleet, and one in the Asiatic Fleet—to the winning vessel in Fleet matches whenever a Fleet match is held under the direction of a commander-in-chief of a Fleet, provided that four or more teams compete in a regular ships' team competition held under the provisions of the Firing Regulations for Small Arms, United States Navy, and then the cups will be transferred upon the completion of the matches.

Beginning with the year ending June 30, 1917, the Department will offer three trophies for general excellence in small-arms practice—one for the battleship and armored cruiser class, one for the cruiser and gunboat class, and one for destroyers and divisions of submarines. This classification is analogous to the classification for other gunnery trophies except that divisions of submarines which are considered separate from their tenders are added to the destroyer class. These trophies will be awarded in each class annually to the vessel or division of submarines attaining the highest final merit.

The reports from sixty-eight ships and from shore stations indicate that of 12,546 officers and men who fired 8,224 qualified as marksman, 2,983 qualified as sharpshooter, 1,158 qualified as expert rifleman, 232 qualified as expert pistol shot.

While this is a most excellent showing for those firing, it represents only about twenty-five per cent. of the enlisted personnel of the Navy.

Very close and diligent attention is given to rifle practice in the Marine Corps under enthusiastic instructors and coaches and for a period of time sufficient to qualify a very large percentage of those firing. This instruction is taken up as recruit instruction with about three weeks' actual range work during

the first two or three months of service with the result that in some companies upward of ninety per cent. of the recruits qualify as marksmen, during their first three months of service.

In the year 1915 the number qualifying in the U. S. Marine Corps was: Expert Riflemen 883, Sharpshooters 2536, Marksman 1471.

"Only when arbitration is able to unravel the tangled skein of crime and hypocrisy among individuals can it be extended to communities and nations. Thence will Interniatonal Arbitration come of its own accord as the natural outgrowth of national evolution through the individual. As nations are only man in the aggregate, they are the aggregate of his crimes and deception and depravity, and so long as these constitute the basis of individual impulse, so long will they control the acts of nations.

"When, therefore, the merchant arbitrates with the customer he is about to cheat; when trusts arbitrate with the people they are about to fleece; when the bulls and bears arbitrate with the lambs they are about to shear; when the thief arbitrates with the man he is about to rob, or the murderer with his victim, and so on throughout the category of crime, then will communities be able to dispense with laws, and international thievery and deception, shearing and murder, resort to arbitration."—GENERAL HOMER LEA.

CHAPTER XLII

THE AMERICAN NATIONAL RED CROSS

THE American National Red Cross has had a number of incorporations, first in the District of Columbia in 1881, under the name of the American Association of the Red Cross; again in 1893 in the District of Columbia, under the name of the American National Red Cross, and in 1900 it was given a national incorporation by Congress. Its last incorporation was received from Congress January 5, 1905, in order to embody certain important changes in its organization and methods of administration. The last incorporation was the first one to protect and restrict the use of the Red Cross insignia, although the United States signified its adherence to the provisions of the Geneva Convention in 1882.

This International Conference of Geneva, recommended "that there exist in every country a committee whose mission consists in coöperating in times of war with the hospital service of the armies by all means in its power."

The Geneva Convention of 1864 and the Geneva Convention of 1906, the latter held for the purpose of revising the Treaty of Geneva (sometimes called the "Red Cross Treaty"), give definite status to certain officially recognized volunteer aid societies. These societies, because of the character of the insignia or badge adopted to distinguish their personnel and material (a Greek Red Cross on a white ground) are universally known as "Red Cross" societies.

PREVENTS AND RELIEVES HUMAN SUFFERING

The American National Red Cross is intended to aid in the prevention and alleviation of human suffering in times of peace as well as war.

Its motto is "Neutrality and Humanity."

The medical service of the Army, Navy, and Marine Corps being non-combatant arms of service, have in keeping with the practice and agreement of all world powers adopted the red cross as the emblem to be worn in battle to guarantee immunity from attack or capture as prisoners of war.

The American Red Cross only recently began the organization of the Department of Military Relief. It is now rapidly perfecting its administration and organization based upon the following diagram:

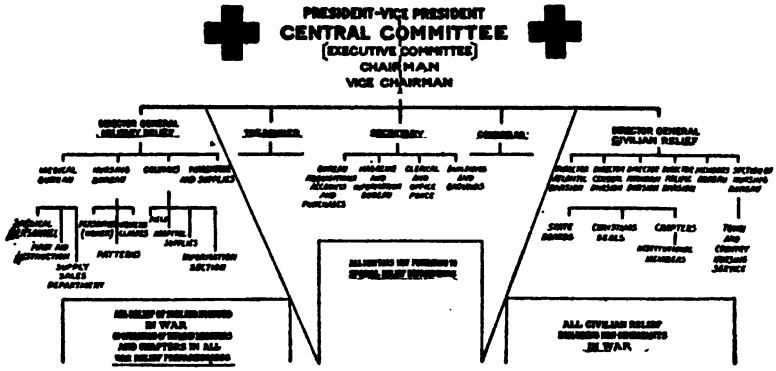


DIAGRAM OF ORGANIZATION OF AMERICAN RED CROSS

President Wilson is President of the Society and Ex-President Taft Chairman of the Central Committee. Major-General Arthur Murray, U. S. A., Retired, is Vice-chairman of the Central Committee. Other members of the Central Committee at present are the Secretary of State, the Comptroller of the Treasury, the Surgeons General of the Army and Navy, the Solicitor General of the Department of

Justice. Colonel Jefferson R. Kean, M C., U. S. Army, is Director General of Military Relief, and Mr. E. P. Bicknell Director General of Civil Relief.

The Red Cross is required by law to make an annual report to Congress through the Secretary of War. The President is authorized to detail not to exceed five officers of the Army Medical Corps for duty with the Military Relief Division. Facilities for the storage of relief supplies at army posts is authorized by law.

A recent report of the operations of the American Red Cross shows that the following shipments have been made to European and other countries from September 7, 1914, to July 1, 1916.

SUPPLIES SHIPPED TO ALLIED POWERS

COUNTRIES	NO. OF PACKAGES	VALUE
Belgium	1,642	$ 74,797.61
Belgium via Holland	507	41,764.50
England	2,616	117,710.80
France	10,257	365,593.88
Italy	525	34,794.57
Montenegro	372	19,510.75
Russia	2,424	114,410.47
Total	32,605	$1,002,021.87

SUPPLIES SHIPPED TO THE CENTRAL POWERS

COUNTRIES	NO. OF PACKAGES	VALUE
Austria	1,891	$ 95,336.09
Bulgaria	51	3,391.40
Germany	2,512	122,029.30
Turkey	309	14,489.82
Prisoners in South Africa and Siberia	1,904	75,485.75
Total	6,667	$ 310,732.36

SUPPLIES SHIPPED TO COUNTRIES OTHER THAN IN PRECEEDING TABLES

COUNTRIES	NO. OF PACKAGES	VALUE
Armenia	42	$ 2,255.85
Haiti	11	705.96
Mesopotamia	20	610.35
Mexico	101	2,335.39
Poland	300	8,950.00
Syria	86	3,091.57
Total.	563	$ 17,949.12

The reason for the discrepancy between the amount sent to the Allied Countries and to the Central Powers is that since January 16, 1916, the Red Cross has not been permitted by the Allies to ship any supplies to the Central Powers.

THE AMERICAN RED CROSS

Since its organization in 1905 it has received and disbursed over $10,000,000 in cash and donated relief supplies to the value of over $5,000,000. It has conducted over eighty Relief Operations in various parts of the world such as the Japanese Famine of 1906; the San Francisco, the Vesuvius, the Valparaiso, and Kingston earthquakes of 1906-07; the Chinese famines of 1907-10; Italian Earthquake, Messina, 1908; Cherry Mine Disaster, 1909; forest fires in 1910; forest fires, plagues, mine disasters, 1911; Titanic Wreck and Mississippi Flood, 1912; Ohio and Interior Storm and Flood Relief; Grecian-Balkan War; Serbian Balkan-Turkish Balkan Relief, 1913.

Floods, Mexican Insurrection, Volcano and other relief, 1914; Serbian Anti-Typhus Campaign and Eastland Disaster, and European War Relief, 1915-16.

The American Red Cross has sent about four hundred surgeons, trained nurses, and sanitarians to various parts of Europe. Shipments of supplies exceeding 5,000,000 pounds have been made to Europe's war zones.

The last American Red Cross hospital unit in the War Zone

of Europe, that at La Panne, Belgium, was withdrawn May 1, 1916. The American hospital units remaining in Europe are of private character and maintained principally by universities and by American philanthrophy.

There are now being organized in large cities of the United States by the Military Relief Division one or more Red Cross Base Hospital units costing $25,000 each for equipment. These units are being directed by the most distinguished surgeons in America. New York has three such units, Boston three, Baltimore two, Philadelphia, Chicago, Detroit, Cleveland, Pittsburgh and Rochester, and Grand Rapids one each.

The Department of Military Relief.

"To furnish volunteer aid to the sick and wounded of armies in time of war in accordance with the spirit and conditions of the Conference of Geneva of October, 1863, and also of the Treaty of Geneva of August 22, 1864, to which the United States of America gave its adhesion March 1, 1882.

"To perform all the duties devolved upon a national society by each nation which has acceded to said Treaty.

"To act in matters of voluntary relief and in accord with the military and naval authorities as a medium of communication between the people of the United States of America and their Army and Navy, and to act in such matters between similar national societies of other governments through the 'Comité International de Secours,' and the Government and the people and the Army and Navy of the United States of America."

Within this Department, therefore, come all duties of the Red Cross relating to the equipment and management of hospitals, hospital trains, hospital ships; transportation of sick and wounded; the manufacture, collection, storage, and distribution of hospital and other supplies, and the organization of information bureaus, wherever required, to serve as a means of communication between the people of the United States and their Army and Navy.

A naval base hospital is being organized in Brooklyn. Con-

gress has placed upon the American Red Cross relief activities as follows:

ORGANIZATION OF RED CROSS BASE HOSPITALS

Red Cross Base Hospital—Army	Medical Officers	Nurses	Nurses Aids (Volunteers)	Administration	Civilian Employees
Director	1	.....	.....	.....	.....
ADMINISTRATIVE DIVISION:					
Record Section, Adjutant:					
Correspondence, Records of personnel, Command of administrative personnel, Sick call for administrative personnel, Medical and surgical records, Admissions and discharges, Reports of cases—physical examinations } Registrar	1	3	.....	5	2s
Supply Section, Quartermaster:					
Property, Medical, Q.M., Ordnance, Signal, Transportation, Buildings	1	.....	.....	10	1s
Subsistence Section, Quartermaster:					
Purchase and issue of food	.....	.....	.....	4	1s
Kitchen, main	.....	.....	.....	8	1cc
Dining room	.....	.....	.....	8	1b
Officers' mess	.....	.....	.....	2	1c
Diet kitchen, Nurses' mess, Linen room } Under chief nurse	.....	2	4	2	.....
	.....	.....	.....	2	2c4m
	.....	1	6	.....	.....
PROFESSIONAL DIVISION:					
Wards	.....	38	15	20	.....
Surgical Section, Assistant Director, others 8	9	.....	.....	.....	.....
Operating room	.....	6	.....	2	.....
Medical Section, Assistant Director, others 6	7	.....	.....	.....	.....
Dispensary	.....	.....	.....	4	.....
Laboratory Section, Assistant Director, others 2	3	.....	.....	3	.....
Bacteriological, pathological, and X-ray laboratories	.....	.....	.....	.....	.....
Morgue	.....	.....	.....	.....	.....
Dental Section, Dentists 2	2	.....	.....	2	.....
Chaplain	1	.....	.....	2	.....
Chapel, library	.....	.....	.....	.....	.....
	26	50	25	80	15

Minimum number necessary for enrollment: Medical officers, 23; dental officers, 2; chaplain 1; nurses, 50; male administrative personnel, all grades, 80; civilian employes, 15; nurses' aids, volunteers, 25, total, 196.

(s) indicates stenographers, (cc) chief cooks, (b) bakers, (m) maids.

The establishment of supply depots and organizations into columns and other units of physicians, surgeons, nurses, and other personnel which may be needed for war service. Courses of instruction under Medical Officers of the Army and Navy are maintained as follows: first year, First Aid to the Injured

(24 lessons of 1 hour each); second year Elementary Hygiene and Home Care of the Sick (24 lessons 1 hour each). Upon completion of these courses by members of the Red Cross certificates of proficiency are granted bearing the signature of President Wilson and other officials.

In time of disaster the Department of Military Relief will furnish any medical or nursing personnel which may be needed by the Department of Civilian Relief.

FIELD COLUMNS CONSIST OF

1 Director.
4 Assistant Directors.
6 Section Chiefs.
16 Assistant Section Chiefs.
64 Men.

SUPPLY UNITS CONSIST OF

Directors.
Pharmacists.
Clerks.
Handlers.
Teamsters, etc.

HOSPITAL UNITS CONSIST OF

1 Director.
3 Assistant Directors and as many Staff Surgeons as may be required.
1 Chief Nurse.
45 Nurses.
Nurses' aids as required.
2 Section Chiefs.
Dieticians, cooks, ward orderlies, etc.

INFORMATION BUREAU SECTIONS CONSIST OF

Directors.
Clerks.
Stenographers, typewriters, etc.

A spirited campaign is now under way to increase the membership of the American Red Cross from its insignificant membership of 27,000, January 1, 1916, to a million members.

Even then it would scarcely equal one-half of the membership of the Japanese Red Cross. As a result of this campaign, however, the membership has already been increased to 196,000.

Any resident of the United States, of good character, is eligible for enrollment as a member of the Red Cross. There are four classes of membership: patron, life membership, sustaining membership, and annual membership. A patron pays $100; the dues for life membership are $25, for sustaining membership $10, payable annually, and for annual membership $1, payable annually. Applications for enrollment should be addressed to the American Red Cross, Washington, D. C., or to the Secretary of a local Chapter. All members receive the monthly illustrated *Red Cross Magazine* during the period of their membership.

FRENCH RED CROSS ACHIEVEMENTS

The Societé de Secours aux Blesses Militaires, the most important of the three societies that compose the French Red Cross, spent about $430,000 per month during the first eleven months of the Old World War, says a recent Associated Press dispatch from Paris. This report reviews the Society's activities up to July 1st.

The other two societies have spent together about $300,000 per month, which at the end of the first year will make a total of about $9,000,000, to which should be added more than

$1,000,000 in gifts of supplies from different countries, bringing the total expenditure by the French Red Cross for the care of wounded soldiers to more than $850,000 per month.

With this money the Red Cross has established more than a thousand hospitals containing more than 100,000 beds, 100 infirmaries, 60 canteens in railway stations, and 130 relief posts near the front; in this work about 18,000 trained nurses and 15,000 auxiliary nurses have been employed. Of these five were killed in the bombardment of Rheims and eleven have succumbed to contagious diseases contracted while caring for soldiers in hospitals. One nurse has been decorated with the legion of honor, 30 have been cited in the orders of the day, and 23 have been accorded the epidemic medal.

"So far as transporting troops is concerned, the sea as a highway is not an obstacle, but a facility. It is very much easier to get any number of troops across the Atlantic Ocean than it would be to get the same number over anything like the same distance on land. Marine transportation is the very best kind you can have; the easiest, least expensive, and most expeditious, if you are considering large bodies of troops and large amounts of material. The fuel charge for transportation in good tramp steamers does not amount to one two-hundred-and-fiftieth part of a cent per ton per mile. The sea is a splendid means of transportation. The distance is only ten days for a vessel of very moderate speed, and you can carry a thousand men on a vessel of 3,000 tons' capacity without any trouble at all. There are any number of vessels to be had, and there is no resistance on this side against a well-equipped force of a hundred thousand men."—General William Crozier.

CHAPTER XLIII

BOY SCOUTS OF AMERICA

INCORPORATED February 8, 1910, Chartered by Congress June, 1916.

When the English Army invaded South Africa during the Boer War it discovered a very valuable auxiliary organization of boys under military age. This force known as boy scouts were thoroughly organized and performing all manner of messenger service and non-military duty in filling the places of those who had joined the Boer Army. General Baden-Powell carried the idea back to England and organized the Boy Scouts of England. During the first eight months of the European War 5,000 medals were given to Boy Scouts of England who had performed no fewer than twenty-eight days' service. About 50,000 boys had served a shorter time. Some served as Coast Guardsmen taking the place of men recalled to the fleet. In 1910 General Baden-Powell visited Canada and the United States appearing in various parts of the country advocating a similar organization here as a means of development of the potentialities of the American boys. The Boy Scouts of America are now conducting a spirited campaign for new members and have passed the quarter million mark. It is wielding a potent influence in the health, education, morality and business training and leadership of young America. As a Scout the boy willingly adopts as real and vital the universally accepted principles of life as set forth in the Scout Oath and Law. This effectively influences the

boy's nature and character so as better to prepare him for that work which the church can best do. The church plays a leading rôle in the Boy Scout movement since it offers a common and free place of meeting under the inspiring environment of Christian endeavor and leadership. The Scout movement is not seeking to displace established educational institution for the value of school instruction is indisputable. It does, however, aim to supplement by engaging the boy's leisure energies in outdoor games and activities of culture and practical value.

SCOUTCRAFT INSTRUCTION

Scoutcraft includes instruction in First Aid, Life Saving, Tracking, Signaling, Cycling, Nature Study, Seamanship, Campcraft, Woodcraft, Chivalry and all of the handicrafts.

In Scouting the boy does not stand still. The opportunity and incentive for progress are always at hand.

He first becomes a Tenderfoot, then a Second-class Scout, and then a First-class Scout. After this the whole sphere of the Scout program is made available by the boy's own application in qualifying himself to pass the test for the various merit badges, which cover the following subjects:

Agriculture
Angling
Archery
Architecture
Art
Astronomy
Athletics
Automobiling
Aviation
Bee Keeping
Bird Study
Blacksmithing
Bugling
Business
Camping
Carpentry
Chemistry
Civics
Conservation
Cooking
Craftsmanship
Cycling
Dairying
Electricity
Firemanship
First Aid
First Aid to Animals
Forestry
Gardening
Handicraft
Horsemanship
Interpreting
Leather Working
Life Saving
Machinery
Marksmanship
Masonry
Mining
Taxidermy
Music
Painting
Pathfinding
Personal Health
Photography
Physical Development
Pioneering
Plumbing
Poultry Keeping
Printing
Public Health
Safety First
Scholarship
Sculpture
Seamanship
Signaling
Stalking
Surveying
Swimming

A boy takes up a hobby with the same zest that he plays tennis or football, and that hobby may become his trade. In other words, a boy has transferred his efforts from idle play or harmful mischief to vital achievements. And when the boy has learned to think constructively through the agency of play his problems are greatly simplified and his life more worth the living.

THE SCOUT LAW

1. *A Scout is trustworthy—*

A Scout's honor is to be trusted. If he were to violate his honor by telling a lie, or by cheating, or by not doing exactly a given task, when trusted on his honor, he may be directed to hand over his Scout badge.

2. *A Scout is loyal—*

He is loyal to all to whom loyalty is due: his Scout Leader, his home and parents and his country.

3. *A Scout is helpful—*

He must be prepared at any time to save life, help injured persons, and share the home duties. He must do at least one good turn to somebody every day.

4. *A Scout is friendly—*

He is a friend and a brother to every other Scout.

5. *A Scout is courteous—*

He is polite to all, especially to women, children, old people, and the weak and helpless. He must not take pay for being helpful or courteous.

6. *A Scout is kind—*

He is a friend to animals. He will not kill nor hurt any living creature needlessly, but will strive to save and protect all harmless life.

7. *A Scout is obedient—*

He obeys his parents, Scout master, patrol leader, and all other duly constituted authorities.

8. *A Scout is cheerful—*

He smiles whenever he can. His obedience to orders is prompt and cheery. He never shirks nor grumbles at hardships.

9. *A Scout is thrifty—*

He does not wantonly destroy property. He works faithfully, wastes nothing, and makes the best use of his opportunities. He saves his money so that he may pay his own way, be generous to those in need, and helpful to worthy objects. He may work for pay, but must not receive tips for courtesies or good turns.

10. *A Scout is brave—*

He has the courage to face danger in spite of fear, and has to stand up for the right against the coaxings of friends or the jeers or threats of enemies, and defeat does not down him.

11. *A Scout is clean—*

He keeps clean in body and thought, stands for clean speech, clean sport, clean habits, and travels with a clean crowd.

12. *A Scout is reverent—*

He is reverent toward God. He is faithful in his religious duties, and respects the convictions of others in matters of custom and religion.

This organization at once appeals to all classes of boys without regard to religion or color. The son of the wealthy meets the boy of poverty on equal terms.

The Boy Scout idea is a movement rather than an Organization. It aims to supplement existing organizations. The aim of the Scout movement is to inculcate character, which though essential to success in life is not taught within the schools and being a matter largely of environment is too generally left to chance often with deplorable results. The Scout movement endeavors to supply the required environment and ambitions through gains and outdoor activities, which lead a boy to become a better man and good citizen.

Scouting means outdoor life and health, strength, happiness and practicable education by combining wholesome, attractive,

outdoor activities and with the influence of the Scout Oath and Law this movement develops character.

It develops the power of initiative and resourcefulness. It helps boys. It insures good citizenship.

Conservation of our national resources is universally approved. The Boy Scout movement conserves the moral, intellectual, and physical future of the coming generation.

Nearly two hundred thousand boys are now registered Scouts. In addition to this, there are probably as many more boys who are more or less actively following out the Scout program. They pay their own expenses, but must be directed, taught, and helped. Seven thousand upright men—largely college men—are scoutmasters and assistants. They receive no pay, but they must be carefully selected, and stimulated by helpful publications and field work. No expensive equipment is required. All that is needed is the out of doors, a group of boys, and a competent leader.

Scouting presents greater opportunities for the development of the boy religiously than does any other movement instituted solely for the boys. Its aim to develop the boy physically, mentally, and spiritually is being realized very widely. The movement has been developed on such broad lines as to embrace all classes, all creeds, and at the same time, to allow the greatest possible independence to individual organizations, officers, and boys.

The Boy Scouts of America maintain that no boy can grow into the best kind of citizenship without recognizing his obligation to God. The recognition of God as the ruling and leading power in the universe, and the grateful acknowledgment of His favors and blessings is necessary to the best type of citizenship and is a wholesome thing in the education of the growing boy. No matter what the boy may be—Catholic, or Protestant, or Jew—this fundamental need of good citizenship should be kept before him.

The Boy Scouts' organization teaches patriotism by telling

him about the country he lives in, her history, her army, and navy, in order that he may become a good citizen and do those things which every citizen ought to do to make the community and land that he lives in the best community and land in the world.

Good citizenship means to the Boy Scout not merely the doing of things which he ought to do when he becomes a man, such as voting, keeping the law, and paying his taxes, but the looking for opportunities to do good turns by safeguarding the interests of the community and by the giving of himself in unselfish service to the town or city, and even the nation, of which he is a part. It means that he will seek public office when the public office needs him. It means that he will stand for the equal opportunity and justice which the Declaration of Independence and the Constitution guarantees. It means that in every duty of life he may be on the right side and loyal to the best interests of the State and Nation. By the "good turn" that he does daily as a Boy Scout, he is training himself for the unselfish service that our cities and land need so much.

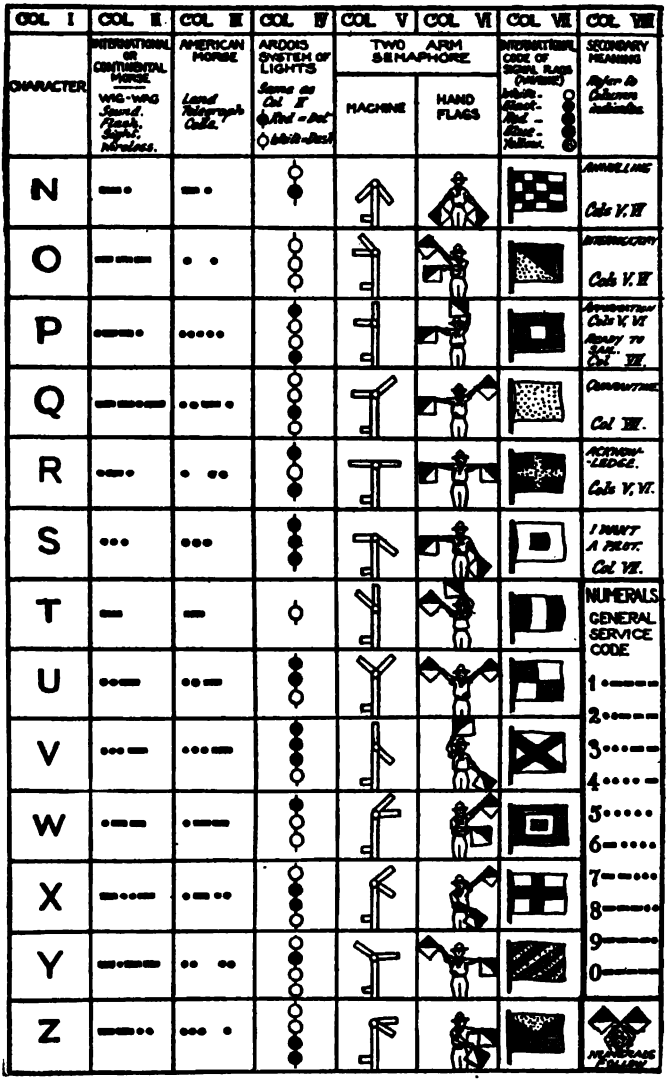
The Boy Scout movement neither promotes nor discourages military training, its chief concern being the development of character and personal efficiency of boys in their teens. To accomplish this, the program necessarily includes special attention to the virtues of loyalty, courtesy, kindness, obedience, cheerfulness, bravery, cleanliness, reverence, resourcefulness, chivalry, temperance, moral courage, neatness, order, alertness, physical strength and endurance.

To this end, special instruction is given in patriotism, signaling, cooking, camping, sanitation, first aid to the injured, how to care for oneself in the open, chivalry, woodcraft, personal hygiene, public hygiene, and the general principles conducive to good discipline.

While some of these things are included in the ordinary preparation for the responsibilities of the life of the soldier, in the Scout program they are all indispensable if a Scout is to live up to the motto, "Be Prepared" and to fulfill his obligations

COL. I	COL. II	COL. III	COL. IV	COL. V	COL. VI	COL. VII	COL. VIII
CHARACTER	INTERNATIONAL OR CONTINENTAL MORSE. WIG-WAG Signal. Flash Code.	AMERICAN MORSE. Land Telegraph Code.	ARDOIS SYSTEM OF LIGHTS. Same as Col X. ◆ Red - Dot ○ White - Dash	TWO ARM SEMAPHORE. MACHINE	HAND FLAGS	INTERNATIONAL CODE OF SIGNAL FLAGS (1899 ISSUE) White. Black. Red. Blue. Yellow.	SECONDARY MEANING. Refer to Column indicated.
A	•—	•—	◆○				Numeral 1 ERROR Cols V, VI.
B	—•••	—•••	○◆◆◆				Numeral 2 Col VI.
C	—•—•	•• •	○◆◆○				Numeral 3 Col VI.
D	—••	—••	○◆◆				Numeral 4 Col VI.
E	•	•	◆				Numeral 5 Col VI.
F	••—•	•—•	◆◆○◆				Numeral 6 Col VI.
G	——•	——•	○○◆				Numeral 7 Col VI.
H	••••	••••	◆◆◆◆				Numeral 8 Col VI.
I	••	••.	◆◆				Numeral 9 Col VI.
J	•———	——•—	◆○○○				Numeral 0 Col VI.
K	—•—	—•—	○◆○				NEGATIVE Cols V VI.
L	•—••	——	◆○◆◆				REPEATED Cols V VI.
M	——	——	○○				

Comparative chart. Signaling systems



Comparative chart. Signaling systems

as a citizen in times of peace, no matter how humble his position may be. This means personal efficiency and character development, and thus makes the Boy Scout movement in reality as strong a factor as any other one agency which the country now has for preparedness.

The uniform, the patrol, the troop, the special Scout drills, and activities are not meant to be parts of military training organization. They are for the uniformity, the harmony, and rhythm of spirit which boys learn in Scouting. It is in the wearing of the uniform, and the doing of things together as Scouts that they absorb the force and truth of the Scout Law which states that "a Scout is a friend to all and a brother to every other Scout." The rifle, the sword, and other purely military accoutrement are not included in the equipment of troops of Boy Scouts of America.

EDUCATIONAL DEPARTMENT

Through two contributions totaling $5,500, the establishment of a Scout Department of Education has been made possible.

The activity and scope of this Department as presented by the Committee of Education is as follows:

(1) Keep constantly before scoutmasters and others actively engaged in Scouting, helpful information and definite programs of practical assistance.

(2) Prepare and secure publication of articles explaining the Scout Movement, with a view to encouraging formation of troops and of securing volunteer service and financial support.

(3) Arrange for exhibits and personal appeals before various student bodies, educational and religious conventions and conferences, for men to serve as scoutmasters.

(4) Arrange for a course of reading or training courses for men, who, in this way volunteer to take up Scout work at some future time.

(5) Develop plans, programs, and suggestions for boys' camps, with the hope that if finances permit, a man should be appointed to give all his time as National Camp Director.

Scout training courses are given at Columbia University, University of Virginia, University of California and the University of Texas.

A very notable development in the recognition of Scouting by educational authorities, in addition to what has taken place at Columbia, is the raising of the Pingree Memorial Fund of $10,000 for the department of Scout training in the Boston University.

REQUIREMENTS FOR TENDERFOOT

To become a Scout a boy must be at least twelve years of age and must pass a test in the following:

1. Know the Scout Law, sign, salute, and significance of the badge.

2. Know the composition and history of the national flag and the customary forms of respect due to it.

3. Tie as directed four out of the following knots: square or reef, sheet-bend, bowline, fisherman's, sheepshank, halter, clove hitch, timber hitch, or two half hitches.

He then takes the Scout Oath, is enrolled as a Tenderfoot, and is entitled to wear the Tenderfoot Badge.

REQUIREMENTS FOR SECOND-CLASS SCOUT

To become a Second-class Scout, a Tenderfoot must pass to the satisfaction of the recognized local Scout authorities the following tests:

1. At least one month's service as a Tenderfoot.

2. Elementary first-aid and bandaging:—know the general directions for first-aid for injuries; know treatment for fainting, shock, fractures, bruises, sprains, injuries in which the

skin is broken, burns, and scalds; demonstrate how to carry injured, the use of the triangular and roller bandages and tourniquet.

3. Elementary Signaling:—know the semaphore or the International Morse alphabet.

4. Track half a mile in twenty-five minutes; or, if in town, describe satisfactorily the contents of one store window out of four observed for one minute each.

5. Go a mile in twelve minutes at Scout's pace—about fifty steps running and fifty walking alternately.

6. Use properly knife or hatchet.

7. Prove ability to build a fire in the open, using not more than two matches.

8. Cook a quarter of pound of meat and two potatoes, in the open, without the ordinary kitchen cooking utensils.

9. Earn and deposit at least one dollar in a public bank.

10. Know the sixteen principal points of the compass.

REQUIREMENTS FOR FIRST-CLASS SCOUTS

To become a First-class Scout, the Second-class Scout must have served as a Second-class Scout for at least two months and pass the following test:

1. Swim fifty yards.

2. Earn and deposit at least two dollars in a public bank.

3. Send and receive a message by semaphore or the International Morse alphabet, sixteen letters per minute.

4. Make a round trip alone (or with another Scout) to a point at least seven miles away (fourteen miles in all), going on foot, or rowing boat, and write a satisfactory account of the trip and things observed.

5. Advance first aid: Know the methods for panic prevention; what do do in case of fire at nights, electric and gas accidents; how to help in case of runaway horse, mad dog, or snake bite; treatment of dislocation, unconsciousness, poisoning, fainting,

apoplexy, sun-stroke, heat exhaustion, and freezing; know treatment for sun-burn, ivy poisoning, bite and stings, nose bleed, earache, toothache, inflammation or grit in eye, cramp or stomachache, ague and chills; demonstrate artificial respiration.

6. Prepare and cook satisfactorily, in the open, without regular kitchen utensils, two of the following articles as may be directed: eggs, bacon, hunter's stew, fish, fowl, game, pancakes, hoecake, biscuit, hardtack or a "twist" baked on a stick; explain to another boy the methods followed.

7. Read a map correctly, and draw, from field notes made on the spot, an intelligible rough sketch map, indicating by their proper marks important buildings, roads, trolley lines, main landmarks, principal elevations, etc. Point out a compass direction without the help of the compass.

8. Use properly an ax for felling or trimming light timber; or produce an article of carpentry or cabinet-making or metal work made by himself. Explain the method used.

9. Judge distance, size, number, height, and weight within twenty-five per cent.

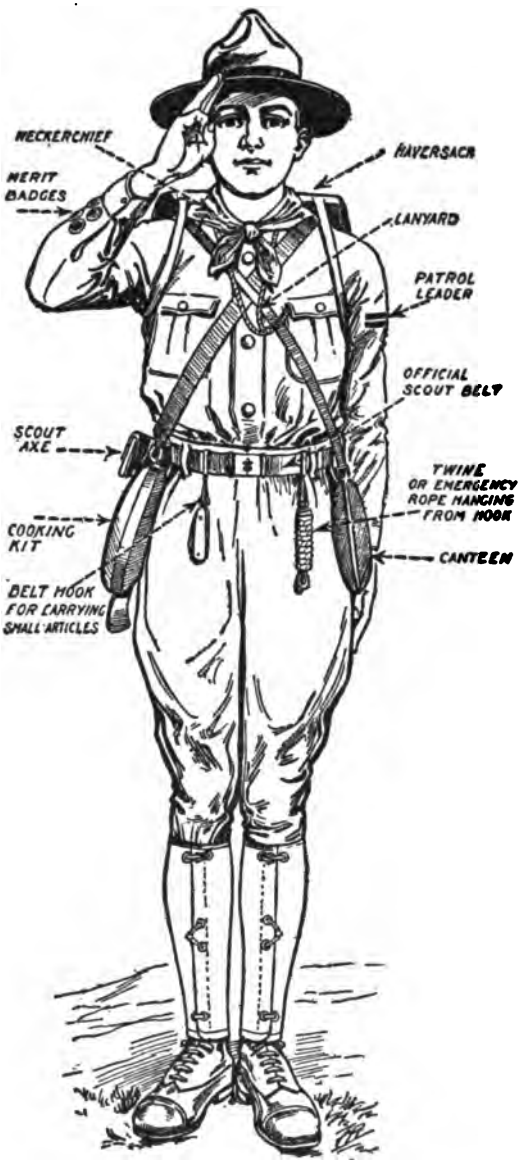
10. Describe fully from observation ten species of trees or plants, including poison ivy, by their bark, leaves, flowers, fruits, or scent; or six species of wild birds by their plumage, notes, tracks, or habits; or six species of native wild animals by their form, color, call, tracks or habits; find the North Star, and name and describe at least three constellations of stars.

11. Furnish satisfactory evidence that he has put into practice in his daily life the principles of the Scout Oath and Law.

12. Enlist a boy trained by himself in the requirements of a Tenderfoot.

THE SCOUT MOTTO

The motto of the Boy Scouts is *BE PREPARED.* This means that the Scout is always in a state of readiness in mind and body to do his duty.


NECKERCHIEF
MERIT BADGES
HAVERSACK
LANYARD
PATROL LEADER
OFFICIAL SCOUT BELT
SCOUT AXE
TWINE OR EMERGENCY ROPE HANGING FROM HOOK
COOKING KIT
CANTEEN
BELT HOOK FOR CARRYING SMALL ARTICLES

STATISTICAL DATA OF REGISTERED SCOUT TROOPS AND SCOUTMASTERS IN GOOD STANDING ON JANUARY 1, 1916

Regarding Scout Troops

Institution	
Baptist	475
Christian Disciples	165
Community Institute	226
Congregational	463
Episcopal	397
Hebrew Synagogue	40
Independent	200
Lutheran	88
Methodist	1,171
Mormon	108
Presbyterian	671
Private School	37
Public School	603
Reformed	90
Roman Catholic	48
Y. M. C. A.	246
Miscellaneous	448
No Record	1,890
Total	7,375
Meeting Place	
Armory	27
Church	3,489
Community Institute	243
Homes	408
Other Public Buildings	654
Public School	770
Rented Quarters	97
Scout Building	120
Y. M. C. A.	246
Miscellaneous	260
No Record	1,061
Total	7,375

Regarding Scoutmasters

Marital Relation	
Married—Has Boys	2,734
Married—No Boys	2,105
Single	2,228
Total	7,067
Average Age	33
Nationality	
American	5,651
English	518
French	14
German	194
Greek	3
Italian	7
Irish	55
Scotch	141
Miscellaneous	185
No Record	299
Total	7,067

Regarding Scoutmasters—Continued

Occupation	
Clergymen	1,645
Doctor	200
Government Employee	149
Journalist	53
Lawyer	147
Mechanical Occupation	691
Mercantile Pursuit	1,739
Prof'l Engineer	69
Student	235
Teacher	790
Y. M. C. A.	175
Miscellaneous	838
No Record	336
Total	7,067
Education	
College	3,056
Grammar	1,127
High	1,547
No Record	437
Total	7,067
Experience	
Boys' Brigade	127
Boys' Club	1,310
Boy Scouts	902
Military	187
Ministry	206
Playground	4
S. S. Teacher	1,013
Teaching	349
Y. M. C. A.	757
Miscellaneous	373
None	132
No Record	1,707
Total	7,067
Church Preference	
Baptist	781
Christian	308
Congregational	669
Episcopal	716
Hebrew	71
Lutheran	185
Methodist	1,974
Mormon	114
Presbyterian	1,141
Reformed	114
Roman Catholic	139
Miscellaneous	349
None	32
No Record	474
Total	7,067

THE SCOUT OATH

Before he becomes a Scout a boy must promise:

On my honor I will do my best:

1. To do my duty to God and my country, and to obey the Scout Law;

2. To help other people at all times;

3. To keep myself physically strong, mentally awake, and morally straight.

When taking this oath the Scout will stand, holding up his right hand, palm to the front, thumb resting on the nail of the little finger and the other three fingers upright and together.

THE SCOUT SIGN

The position of the hand just described, under the Scout Oath, is the Scout Sign. The three fingers held up remind him of his three promises in the Scout Oath.

THE SCOUT SALUTE

When the three fingers thus held are raised to the forehead, it is the Scout Salute.

THEODORE ROOSEVELT ON THE BOY SCOUT MOVEMENT

(Excerpts from a public letter addressed to the American Boy Scouts)

We should copy the example of Switzerland and Australia, two of the most absolute democracies in the world, and should train our boys in the schools after they reach a certain age, so that at some period between the ages of 18 and 21 they may be trained by actual service in the field with the colors to be a real and not a sham citizen soldiery. This is the only democratic system.

In a democracy no man has any right to escape military training and, if necessary, military service, any more than he has the right to escape the payment of taxes. One obligation should no more be treated as voluntary than the other. . . .

Every boy should be trained to know that every able-bodied citizen owes a civic duty to the nation all the time, and not a soldier's duty in time of war. This is not a matter of voluntary action. It is not open to the right-thinking boy or man to decide whether he will volunteer to be patriotic or volunteer to have somebody else patriotic for him. It is his duty to be patriotic. Primarily he must show his patriotism by his service to the nation in time of peace; but in time of war he owes a soldier's duty to the nation. It may not be in the fighting line, but it is wherever he is best fitted to work. He should, while a boy, have such training as will help his whole general development as a useful all-round citizen of the country. . . .

Of course there can be no adequate preparedness for war unless there is preparedness for the duties of peace, just exactly as it is useless to prepare for the duties of peace unless we prepare also to defend ourselves. . . . The Boy Scouts should be sedulously trained, so that they can act together, and at the same time each increase his individual self-reliance. . . .

The Boy Scout Movement is distinctively an asset to our country for the development of efficiency, virility, and good citizenship. It is essential that its leaders be men of strong, wholesome character, of unmistakeable devotion to our country, its customs and ideals, as well as, in soul and by law, citizens thereof, whose whole-hearted loyalty is given to this nation and to this nation alone.

With all good wishes. Sincerely Yours,

THEODORE ROOSEVELT.

"National defense is a responsibility in which each of us shares alike.

"We will not be *prepared* until every able-bodied man is trained in the duties of the citizen-soldier."—MAJOR-GENERAL LEONARD WOOD, U. S. Army.

CHAPTER XLIV

GARRISON LIFE IN THE ARMY AND NAVY

ARMY and Navy posts and stations are of necessity more or less independent of the adjacent territory. They are completely supplied with all the ordinary equipment that goes to make up a municipality. There are the quarters and barracks, the roads, walks and wharves, the water and sewage systems, the storehouses and stables, the fire department, the hospital, the Y. M. C. A., and the church, the school, and Sunday school, the gymnasium and post exchange, the athletic field and drill ground, the target range, the dairy, orchard and gardens, the woods and wood pile, railroad depot, street car line or boat service and the guard house or prison ship the prototype of the town or county jail.

Our military posts are large in area compared to the Barracks of European garrisons and require a large expenditure as well as a large amount of non-military duty for their proper upkeep.

Each European capital has its Army Corps. Neither our Capital nor our Metropolis has within a day's march or several days' march, a sufficient number of regular troops to constitute the funeral escort of a President, Admiral, or Major General.

Service in the Army and Navy and Marine Corps is a very serious, arduous, businesslike proposition. Each hour of the day from reveille to retreat has its allotted work, training, drill, study, or recreation all to be accomplished under the watchful eye of the Commanding Officer. The bugler at headquarters or aboard ship announces the various phases of the day's routine. From retreat to tattoo, call to quarters, taps and on

to reveille throughout the night a portion of the officers and soldiers or sailors are performing that bugbear of the service, the daily tour of guard duty.

The Army and Navy constitute the largest unit of professional and laboring people under one control in the United States. They constitute the very bulwark of the nation, the one element of national strength and power destined to protect and perpetuate all other departments of the Government.

Those who are not familiar with the military and naval service may entertain the impression that discipline is harsh and rigorous. For the proper and efficient government of any military service rules and regulations, and strict obedience thereto, must necessarily be required. Without these a military organization would soon become nothing more nor less than a disorganized mob.

The rules and regulations governing the service, commonly known as discipline are such as a law-abiding, self-respecting man would prescribe for himself. They include *strict attention and obedience to all lawful orders;* courteous deportment toward, and respect for, every man in the service; zealous and conscientious performance of all duties; regular hours for eating, sleeping, working, recreation, and diversion.

Military authority is exercised with firmness, kindness, and justice. Each post or station has its guard house or prison ship for the restraint and punishment of those who break the rules. Punishments conform to law and follow offences as promptly as circumstances will permit. Superiors are forbidden to injure those under their authority by tyrannical or capricious conduct or abusive language. Courtesy among military and naval men is indispensable to discipline. Respect to superiors is not confined to obedience or duty but is extended on all occasions.

Following the old adage "All work and no play makes Jack a dull boy," ample provision is made in the Army and Navy for wholesome pastime and recreation. Athletics are encouraged to an extreme degree. Periods are set aside for physical

U. S. Naval Training Station, Great Lakes, Illinois

Saturday morning inspection at the Great Lakes Training Station

exercise and sports of all kinds. Field sport days are given over entirely to athletic contests for which suitable prizes are awarded.

Many of these events are of a military nature and tend to create proficiency and speed in military tasks such as tent pitching, trench digging, wall scaling, swimming, rowing, riding, shooting, running, cooking, boxing, wrestling, bayonet combat exercises, etc. In the Philippines and China these Field Day exercises have come to be known as "gymkana."

Religious services are conducted by the Chaplain in the post chapel or aboard ship, in the Y. M. C. A., tent when in the field or in the open air.

Each regiment has a band of twenty-eight experienced musicians which in addition to the martial music incidental to review and parades gives open-air concerts at stated intervals and furnishes music for dancing and other pastime as occasion demands. Congress has forbidden these bands to furnish music in competition with civilian musicians.

Each organization has about twenty per cent. of non-commissioned officers, and at each post or naval station a number of quarters are provided for the Warrant Officers and superior grades of non-commissioned officers.

Foreign service rosters are kept so that as far as practicable such service will be equalized. Pay proper is increased twenty per cent. for enlisted men and ten per cent. for officers for foreign service. Two years in the Philippine Islands and three years in Hawaii and the Canal Zone constitute a normal tour of foreign duty. Sea duty in the navy is likewise increased over shore duty.

Various kinds of trade schools are maintained for enlisted men of the Army and Navy. Common branches are taught all who volunteer for such instruction. Much of the Army and Navy service is mechanical, engineering or electrical and offers excellent opportunity for young men to learn a skilled trade or vocation while serving an enlistment. The Barracks

are well equipped with reading and recreation rooms and well supplied with books and current literature.

The Post Exchange is a coöperative store owned by the organizations; the profits being devoted to augmenting the mess or for athletic supplies, books, phonographs, pianos, interior decorations, etc.

Under the new army enlistment contract those who attain satisfactory proficiency within a year may be discharged. The age of enlistment with parents consent has been reduced to sixteen years and the term of enlistment after Nov. 1, 1916 to three years with the colors and four years in the reserve.

The sale of intoxicating liquor to soldiers or sailors at military posts and naval stations or aboard ship is prohibited by statute.

The Government is very liberal in granting furloughs or leaves of absence on full pay to enlisted men and officers, aggregating one month each year. It often happens that such leave periods are not availed of year after year until four month's leave can be enjoyed traveling in Europe, China, Japan, India, Australia, Egypt or elsewhere.

The Army and Navy Relief Societies are organizations for the purpose of supporting, educating, and caring for orphans in the Army and Navy and destitute families. Its funds are raised by voluntary contribution and by various benefit entertainments.

"In time of war the civilian as much as the soldier is responsible for defeat and disaster. Battles are not lost alone on the field; they may be lost beneath the Dome of the Capitol, they may be lost in the Cabinet, or they may be lost in the private office of the Secretary of War. Wherever they may be lost, it is the people who suffer and the soldiers who die, with the knowledge and the conviction that our military policy is a crime against life, a crime against property, and a crime against liberty. The author has availed himself of his privilege as a citizen to expose to our people a system which, if not abandoned, may sooner or later prove fatal. The time when some one should do this has arrived."—General Emory Upton.

CHAPTER XLV

SAFETY FIRST FOR THE NATION THROUGH UNIVERSAL MILITARY AND NAVAL TRAINING OF YOUNG AMERICA

AMERICAN public sentiment is crystalizing favorably to some form of national military training for every able-bodied youth before he has become an important factor in the economic life of the nation.

This sentiment is a by-product of the campaign for Preparedness which is being waged throughout this ill-defended treasure land of peace and plenty. Peace is becoming dearer to the American people both literally and figuratively as a result of the titanic struggle abroad and a realization of our own weakness and unpreparedness.

In seeking the cause and considering a remedy most clues are leading direct to the schoolroom wherein we were taught, and wherein our children are now being taught, a brand of United States History which we now know to be spurious and misleading.

This is due to a lack of historical education on the part of the masses who quit school early in life and to the past and present methods of teaching of United States History to those who remain in school until they complete this subject. Many drop out of school about the time they have completed the so-called United States History and are ready to seriously take up the subject of mathematics, literature, languages, sciences, and General History. The numerous instances in United States

History where raw, untrained troops have suffered ignominious defeat are passed over or entirely overlooked as though tending to belittle patriotism and love of country.

Is it any wonder we are so woefully ignorant about the past and present security of our own nation and look more or less suspiciously upon the utterances of the professional historians of to-day, who are fearlessly pointing out the lessons of unpreparedness forcefully taught by every national conflict? I personally participated in this *crime against the nation* for five years as a teacher and principal of public schools by teaching United States History as it was taught me, and unfortunately, as it is being taught to-day.

The cause and remedy are undoubtedly rooted in our public educational system.

We must teach our teachers to teach the truth, the whole truth, and nothing but the truth about the *story* of these United States. Their pupils will become the teachers of the next generation. One generation of honest teaching of United States History will suffice to produce a brand of American patriotism which will stand sponsor for adequate, constant preparedness for war as the most certain and positive insurance against war. But each generation must answer this question anew.

A vital contributory cause of existing conditions is the lamentable, and highly inexcusable fact that about seventy per cent. of young America who have not dropped out before reaching the grammar grade in public school do so before reaching the high school. Less than ten per cent. of high school age graduate from high school and less than five per cent. of college age are attending college. I am purposely introducing this discussion in this volume as a subject deserving of the most profound and serious consideration as it affects the question of National Preparedness—a purely educational, economic, and industrial question. The status of education as to attendance and military training is the best gauge of the military preparedness of

any nation and likewise the best gauge of its industrial and economic efficiency.

The American people individually and collectively have developed an enviable faculty of getting what they want when they want it, but seldom without a longitudinal view of all attending facts and circumstances.

Just now the trend is toward universal military and naval training and industrial organization as the panacea for all the military ills this Nation is heir to.

The State Legislature of New York in 1916 passed a bill for compulsory military training in public schools.

This question is prominently before Congress through various measures recently introduced and before the National Educational Association and civic bodies.

United States Senator Chamberlain of Oregon, Chairman of the Senate Military Committee, after many conferences on this subject and profound study introduced Senate Bill 1695 (64th Congress) "to provide for the military and naval training of the citizen forces." The provisions of this measure are given herein as a basis for discussion and study of various phases of this vital question which will probably be passed in some form by the 65th Congress.

There is a wide divergence of views as to what form universal military training should take and at what ages it should be required. The views of Ex-President Roosevelt on this question as set forth in a recent issue of *Scouting* are briefly quoted at the end of the Chapter on Boy Scouts.

The Chamberlain Bill provides that able-bodied male inhabitants twelve to twenty-three years of age be liable for military and naval training for a total period of two years. Certain exemptions are made on account of religious belief, physical or moral disability, and other sufficient reasons.

This period comprises service in the Citizen Cadet Corps from twelve to eighteen years of age and in the Citizen Army or the Citizen Navy at eighteen to twenty-three years of age.

TRAINING IN THE CITIZEN CADET CORPS

Between twelve and fourteen years ninety hours of training is required consisting of calisthenics, physical and military drill without arms.

Between fourteen and sixteen years ninety hours of military training and target practice.

Between sixteen and eighteen years ninety hours training in field exercises and target practice and in addition ten whole days in camp each year.

TRAINING IN THE CITIZEN ARMY

Not less than one hundred and twenty hours or twenty whole days each year for six years with at least ten whole days of continuous training in camp each year.

The above training may be daily drills of one, three, or six hours each.

The members are organized into the various armies, corps, or departments necessary for tactical organization.

At eighteen years of age members may be transferred to the Citizens Navy.

It is contemplated that the prescribed training may be given in public and private schools, academies, colleges, universities, in the National Guard, or Naval Militia, the Boy Scouts or similar organizations. Upon reaching the age of twenty-four years and having completed this course of training members will pass into the Citizen Army Reserve.

The penalty for wilful evasion of this training is liability to a fine of $500 and twenty days confinement and ineligibility for holding federal position.

There is a severe penalty for employers who interfere in any way with a fulfillment of this service by their employees.

Wilful failure to attend drills is a misdemeanor punishable by a fine not to exceed $25.

The United States is to be divided into training districts and training centres in charge of commissioned officers.

The President is authorized to mobilize the Citizen Army and Navy in time of war or threatened war, insurrection, or rebellion or when the public safety demands it. For the purpose of carrying out the provisions of this act (except the Citizen Navy) it is provided that there shall be established in the War Department a division of the General Staff Corps which shall be known as the Citizen Army Division of the General Staff Corps.

Since the adequateness of the National Defense is both directly and indirectly a product of the educational system of the country it appears to me that universal military training will be an opening wedge toward a unification and standardization of the public educational systems of the various states as now separately maintained and advance the movement for a National University at Washington. The status of national education is akin to that of the National Guard wherein each state has its respective laws and regulations. Something drastic must be done looking to a greatly increased attendance in grammar and high school as well as enrollment in the National Guard.

These two institutions, the Public School and the National Guard, should be brought closer together. The appalling low rate of attendance in public schools above thirteen years of age is attributed to family poverty and the necessity or demand of the parents for the daily labor of the child. Going to school involves a considerable expenditure, and going to college has become almost prohibitive to the self-supporting boy or girl. A little outside pecuniary assistance to such families will bring happy and far-reaching results.

If there is one nation on earth whose wealth and resources are ample for the liberal education of every child that nation is the United States, but many nations are doing more for the proper education and training of their children, comparatively speaking, than is our nation. God speed the day of Universal Military and Naval Training for Young America.

CHAPTER XLVI

*OUR MILITARY AND NAVAL RESOURCES VS. OUR MILITARY AND NAVAL POWER—NATIONAL ASSURANCE VS. NATIONAL INSURANCE

WHEN our relations with Sister Republic Mexico became strained in 1913 I whispered alarm, in essay form, as to the low rate of conversion of our military and naval resources into military and naval power. Aside from being awarded the gold medal prize of the Military Service Institution of the United States it created no interest or attention. In the meantime, that war cloud has thickened and others have appeared. The omens are very propitious. I am constrained, therefore, to raise my voice to a higher pitch by closing this volume with excerpts from this essay, with slight amendments, as a second appeal from an humbled servant of a vainglorious Republic which presumes enviable leadership in Universal Peace and International Commerce and in preaching and practising the Golden Rule.

That our military and naval resources are practically unlimited is axiomatic.

That our military and naval power is very, very limited is enigmatic. Solving this enigma is a vital function of American citizenship and patriotism.

The American people appear not to appreciate that—

The euphonious terms "military and naval resources" and "military and naval power," "national assurance," and "national insurance" are not synonymous terms; that—

Only a small portion of our military and naval resources

*Excerpts from Gold Medal Prize Essay of the Military Service Institution of the United States, 1913, with Amendments, By Captain Harrison S. Kerrick, C. A. C.

have been converted into military and naval power; that—

This nation is over-assured and under-insured; that—

We boast of being a national power of the first class, whereas we are a naval power of the third class (1913) (5th or 6th class, 1916) and a military power of the eighth class, 1913 (12th class, 1916); that:

The Army and Navy are the real bulwark of the nation—the only dependable measure of national strength; that—

Our prospective enemies, the maritime powers of the Eastern Hemisphere, maintain enormous standing armies and army reserves ready for action; that—

We maintain a very small standing army, by voluntary enlistments, more or less unready for action; that—

We have no reserve army; that—

We have no merchant marine; that—

We have no army transport service; that—

We have no volunteer army; that—

We have a small militia force available for home defense only; that—

Our army is distributed throughout widely separated parts of the world; that—

We have only about 37,000 mobile troops in the United States available for emergency; that (not including Alaska)—

We have 5,000 miles of Atlantic and Pacific coast lines, jetted with seaports, through which the over-production of our farms and factories reach the foreign marts; —

The Panama Canal is fast nearing completion by the War Department;—

That 33,000,000 of our people live within warship range of navigable water, that—

Time is the all-important vital question and factor in present-day warfare; that—

In the next international conflict, as in the last, victory will probably rest with that nation which can strike the quickest and hardest blow the instant war is declared, rather than with that

nation which can raise the largest army in six months or a year; that—

The United States cannot strike a quick, hard blow to any nation; that—

We are now a peaceful nation by necessity rather than by design; that—

If we would be a nation of peace by design, rather than by necessity, we must first fortify our nation with army and navy bulwarks of the first rating.

Then and not until then should we give way to that vain-glorious boasting and hauteur so prevalent amongst our pacifists who refer to our national assurance as though it were boundless and who speak of this Nation's future in positive declaration of confidence, guaranty, surety, and utmost certainty.

National blunders, weaknesses, defects, and the lessons of unpreparedness taught by every war and conflict are carefully omitted from text-books on United States History, resulting in these prevailing distorted and dangerous opinions as to our national strength and weakness and the improbability of war.

The enormity of our export trade is the wonder and envy of the commercial world. This foreign commerce merits safeguarding and insurance as a great national asset. There are those still living who remember the 8-cent corn and wheat, the 1-cent cotton, and the dollar calico during the Civil War, incident to the interruption and destruction of our foreign commerce.

The Monroe Doctrine of "America for Americans" makes our national defense system of continental, yea, hemispheric, limitations and importance.

This Monroe Doctrine is not a national nor an international law. It is merely a policy of the United States. A policy to perpetuate popular government throughout the Western Hemisphere.

Other maritime powers have converted a comparatively large proportion of their military and naval resources into military and naval power. They are prepared to strike quick, hard blows the

instant war is declared. They have subsidized transport services of fleets of the largest, speediest ocean liners.

The best insurance against interruption of peace, progress, and prosperity is adequate, constant, preparedness for war.

The time is indeed opportune and the omens propitious for a campaign of military education that will enlighten the American people on these vital questions of national defense and international policy.

The hour is at hand for the rapid conversion of our latent military and naval resources into military and naval power. There should be a careful inventory and revision upward of our national insurance policies to justify our highly inflated national assurance.

Optimism and egoism and pacifism prevail to an abnormal and dangerous degree.

A NATIONAL DEFENSE POLICY

Congress has not formulated and promulgated an abiding policy of national defense. The nearest approach has been the consideration given in committee to the measure introduced from time to time for a "Council of National Defense," to be composed of a limited number of members of both Houses, the Secretaries of War and Navy, the Chief of Staff of the Army, the Chief of Naval operations, and certain other officials of the War and Navy Departments, and civilians.

THE MEXICAN SITUATION

We have not (1913) recognized the dictatorship or the Constitutionalists in Mexico. We have no ambassador at its capital. There is and has been provocation for intervention.

The belief prevails that the first act of belligerency on our part will be the signal for a union of all armed Mexican forces against us. The public should review the horrors of war and

prepare for another serious national shock. When war will come again no one can tell, but that it will come again there is every reason and precedent to believe. This nation is unprepared for war, even with our supposedly weak and impoverished sister republic. At the outbreak of war with Mexico an army of 250,000 trained troops should be available.

Intervention will indicate to the world the inability of the Mexican people to govern themselves—i. e., will question their capacity for popular government. This would be a blow at popular government, which the Holy Alliance, dormant but not necessarily dissolved, might revive as a fallacy of the Monroe Doctrine.

The consequences to the United States of war with Mexico are very grave indeed.

The determination of President Wilson and Secretary of State Bryan, backed by the strong anti-intervention sentiment throughout the country, is a glowing tribute to the cause of universal peace and popular government. But war may be forced upon us despite our efforts to prevent.

Let us hope for a speedy return of peace throughout Mexico and rapid reconstruction under a strengthened form of popular government that will reflect the wisdom of the Monroe Doctrine and the diplomacy exercised by our present Chief Executive and Secretary of State.

THE MILITARY POLICY OF THE WAR DEPARTMENT

After several years of study and deliberation the General Staff Corps recently (1912) submitted to the Secretary of War a policy for the proper military mobilization at the outbreak of war with a maritime power.

This report represents the views of the War Department and the best military thought of the country.

Briefly, 502,000 trained soldiers are required for the first line of defense and 300,000 for the second line. Total, 802,000.

Our present force of about 90,000 men is distributed throughout the world—in China, the Philippine Islands, Hawaii, Alaska, Canal Zone, along 1,800 miles of Mexican border, in division camp at Texas City, and at over one hundred garrisoned army posts and fortifications. In time of war the force beyond the United States could not be returned home, nor could it be reinforced from home until after we had secured command of the sea.

At the outbreak of war under the present status there would be available in the United States for the first line about 37,000 mobile troops of infantry, cavalry, and field-artillery. Fifteen thousand coast-artillery troops and 100,000 militia (provided eighty per cent. of the militia turned out)—a total combatant force of about 152,000 more or less trained troops. Probably not ten per cent. of this force have ever been "under fire." There would remain a shortage of 350,000 troops for the first line and 300,000 for the second line—total shortage, 650,000. Of course there would be no second line until the first line deficiency had been provided, and probably 75,000 more to replace its casualties in the early stages of war.

Complete complements should be provided for all naval ships in commission.

STRENGTH OF THE ARMY

The enlisted strength of the Army should be greatly increased on a two-year enlistment basis, with division camps of instruction and reserve army features which will assure within a period of five or ten years an army reserve of 500,000 to a million trained young men ready and obligated for service in war.

This increase should be apportioned among all branches of the service. Infantry and field artillery should be given preference.

The invaluable service which our cavalry is performing on the Mexican border has quieted opposition to the present

strength of our cavalry forces and demonstrated the propriety of increasing rather than decreasing this arm. The Coast Artillery Corps should be increased sufficiently to provide for one complete manning detail for all fortifications at home, at Panama, Hawaii, and the Philippines, assuming that the coast artillery of the National Guard will be available for service at nearby forts in time of war.

THE ARMY RESERVE

We Americans are primarily industrious laborers, business and professional men, strenuously occupied in keeping the wolf from the door and providing a surplus for "rainy days," and a reserve in our declining years. We look to the Government officials to perform the business of running the Government competently and prudently.

The warnings of weakness and military unpreparedness sounded in the President's messages to Congress, backed up by the reports of the Secretaries of War and Navy, the Chief of Staff and Naval Operators and bureau chiefs, are cried down in a tumult and tirade against "militarism" and as though there were cries of Lions! Lions! and there were no lions.

The first net profits of frugal business are applied to fire insurance and the ordinary business safeguards. Then a "reserve" is prudently set aside before declaring the coveted dividends.

This "reserve" is the barometer that best reveals the financial status. In like manner will not an army and navy reserve, of say one million, better measure and reflect the dignity and stability of this Nation and best prevent war?

PAY THE MILITIA

The National Government is now receiving something for nothing in the nature of the valuable services rendered by the

officers and men of the National Guard and Naval Militia without federal pay. The actual duty rendered through the organization, instruction, and drills of the militia is as meritorious of a proper compensation by the Federal Government as are the services of the Regular Army.

During the last few years National Guard organizations have been federalized and are putting on new life and efficiency through enforcement of the Dick Bill. The Guard and the Regular Army are becoming an homogeneous body of troops that stimulates patriotism and the creation of a better opinion and increased appreciation of both forces by the people.

The organized militia is worthy of its hire and should not be expected to attend without drills at the expense of its individual members with the attending sacrifice to business, personal and family obligations.

A militia pay bill should be enacted as a grateful acknowledgment of meritorious service and to stimulate greater proficiency.

ARMY TRANSPORT SERVICE

The Army and Navy has no transport service worthy the appellation.

There are on the Pacific a few army transports for the transfer of troops and supplies to and from Hawaii and the Philippines in time of peace. These ships do not measure up to the appellation "Army Transport Service" as defined abroad. At most they are small converted ocean liners, of low speed and efficiency, built thirty-five or forty years ago.

The *Kilpatrick*, *Sumner*, *Meade*, and *McClellan* are on the Atlantic and have a combined total capacity of two regiments (2,000 men) with a steaming rate of 7 to 8 knots.

In laying down the design of the *Imperator;* the German Emperor, it is said, charged his engineers with the construction of a ship that would transport two army corps (48,000 men) of the German army at twenty-five knots. The *Imperator* alone

can carry about twenty times as many troops as all of our Atlantic army transports and at three times the speed.

In the spring of 1913 the Secretary of War announced to the presidents of a number of colleges and universities his willingness to organize one or more summer camps of military instruction for the benefit of college students who were desirous of thus spending their summer vacation. Ninety colleges contributed one or more students each. Two camps were necessary, one at Gettysburg, Pa., and one at Monterey, Cal. This camp instruction and military training produced a most salutary effect in awakening in these college students a sense of responsibility and culpability for the conditions of our military unpreparedness apparent to all who will take time to inquire. This sentiment crystallized in New York City, November 19, 1913, at an assembly of college presidents and camp students through the organization of the "Society of the National Reserve Corps." Princeton, Harvard, Yale, Michigan University, Virginia Military Institute, Columbia College of N. Y., Lehigh University, California University, and other prominent institutions were represented by their presidents. These eminent educators heartily approved of this innovation of the War Department and believe that the Student Military Camps of Instruction will become very popular and a strong feature for military advancement of the country.

The society's constitution is a clear-cut, businesslike exposition of the military obligations of citizenship, and a tremendous stride in the direction of an awakened national conscience on this question of preparedness for the national defense.

SEMI-MILITARY ORGANIZATIONS

The National Rifle Association of the United States, the Boy Scouts of America, Cadet Corps and kindred semi-patriotic organizations, are teaching the young men and boys of the country the proper care and use of the rifle and skill in firing it

and instilling a love of country and the flag and a willingness to fight for them if needs be.

The Navy League, the newly organized National Security League and the Affiliated National Defense and Army Leagues have taken up the slogan of Preparedness with vigor and prudence and with gratifying though not satisfying results.

PATRIOTIC INSTRUCTORS OF AMERICA

The G. A. R., the United Spanish-American War Veterans, and patriotic societies have organized the Patriotic Instructors' Association, having for a motto, "Ducit Amor Patria" (Love of my country leads me). The G. A. R. hopes thereby, in its fast declining years, to bequeath to a grateful republic an association which will stand sponsor for the teaching of patriotism to young and old, and the election of truly patriotic representatives in Congress.

President Abraham Lincoln as Commander-in-Chief of the Army and Navy during the Civil War commanded more armed forces than the aggregate forces commanded in peace and war by all other Presidents during the one hundred and twenty-seven years of our national life.

THE LINCOLN DOCTRINE ENUNCIATED AT GETTYSBURG BATTLEFIELD, JULY 4, 1863, SHOULD BE MEMORIZED BY EVERY AMERICAN BOY AND GIRL

"Fourscore and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty, and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battlefield of that war. We have come to dedicate a portion of that field as a final resting-place for those who here gave their lives that that nation might live. It is all together fitting and proper that we should do this. But in a

larger sense we cannot dedicate, we cannot consecrate, we cannot hallow, this ground. The brave men, living and dead, who struggled here have consecrated it far above our poor power to add or detract. The world will little note, nor long remember, what we say here, but it can never forget what they did here. It is for us, the living, rather, to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us;—that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion;—that we here highly resolve that these dead shall not have died in vain, that this nation, under God, shall have a new birth of freedom, and that government of the people, by the people, for the people, shall not perish from the earth."

These Patriotic Instructors labor to bring prominently before the rising generation the proper observance of national patriotic holidays; the reading of Lincoln's Gettysburg speech; the singing of national hymns; the playing of national airs, and a true estimate of the national defense.

Not until Young America has matriculated in that post-graduate University of Hard Knocks for the coveted degree, Captain of Industry, does he fully realize that the United States is a young nation of nervous, busy, non-military, hysterical people, of all shades and complexions, with no thought of militarism and not yet that great world power and Utopia of his schoolboy days.

TIME! TIME! TIME!

Given unlimited time the United States can organize, equip, and place in the field ten million soldiers, sailors, marines, and coast guards without exhausting its military resources. But the Time! Time! Time! This element of Time is the all-important vital factor in modern warfare.

More time than ever is required to convert military resources into military and naval power. And we only have what time there is. "A stitch in time (still) saves nine"; "an ounce of prevention" is (still) worth 16 ounces of cure.

Is "to be forewarned" no longer "to be forearmed?"

Two years ago (1911) the International Peace Parliament selected Rome, Italy, as its next meeting place, but ere this Peace Congress had assembled in the erstwhile peaceful country, behold! Italy and Turkey were engaged in a ferocious war in Northern Africa. The Italian delegates through patriotism and devotion to their country refrained from participation in this so-called peace conclave.

CONCLUSION

The Palace of Peace endowed by a naturalized American has been dedicated by a World Congress within a twelve-month (1912) almost within sight and sound of that terrible Balkan War. The International Congress of Law recently convened in England. Arbitration treaties are being ratified and are pending between practically all of the nations of the world. But let us not mistake the dawn for the day of universal peace. We must still keep our lamps trimmed and filled.

The day of restricted battleship construction and disarmament as foreshadowed by the proposed (by England) international naval holiday is not at hand while England has forty-two, Germany twenty-six and the United States, France, and Japan each only twelve battleships of the highest rating.

Our Nation is growing by leaps and bounds. It should be safeguarded upon the same business principles by which, as individuals, we increase our life and fire insurance policies and as business institutions establish a "reserve" and other form of insurance and safeguards.

Our national debt is a mere pittance; scarcely more than the municipal debt of the city of Greater New York.

Let us not be lulled to sleep by the siren of universal peace and foreign and domestic commercial activities and competition and permit our national insurance policies to lapse.

It should ever be borne in mind that present-day warfare is scientific, technical, mathematical, and requires a more intelligent, better-trained personnel than ever before.

This is the day of military aeroplanes, dirigible balloons in which the United States recently led but now trails all the nations. This is the day of the submarine mine, the submarine boat, the 19,000-yard mortar, the 16-inch rifle. This is the hour of the mysterious warcraft controlled by radio from shore, (John Hays Hammond's, Jr., radio controlled boat). This is the day of the high velocity smokeless powder, breech-loading magazine and automatic rifle and the light-weight automatic, air-cooled, flameless, recoilless machine gun that can be fired 800 times per minute from an aeroplane or elsewhere.

Human nature has not changed very much after all.

"Blood is (still) thicker than water."

Culpability for the consequences of future warfare involving the United States rests primarily upon the American people pending the creation of a Council of National Defense and the promulgation of a National Defense Policy.

When such a policy has been promulgated and developed to reasonable efficiency, culpability can be transferred to Congress and the Army and Navy. Then and not till then may the euphonious terms Military and Naval Resources and Military and Naval Power; National Assurance and National Insurance be considered synonymous terms.

God speed that day.

"I cannot help plead to my countrymen, at every opportunity, to cherish all that is manly and noble in the military profession, because Peace is enervating and no man is wise enough to foretell when soldiers may be in demand again."—GENERAL SHERMAN.

FLAG DAY PROCLAMATION OF PRESIDENT WILSON

"My fellow countrymen: Many circumstances have recently conspired to turn our thoughts to a critical examination of the conditions of our national life, of the influences which have seemed to threaten to divide us in interest and sympathy, of forces within and forces without that seemed likely to draw us away from the happy traditions of united purpose and action of which we have been so proud.

"It has therefore seemed to me fitting that I should call your attention to the approach of the anniversary of the day upon which the flag of the United States was adopted by the Congress as the emblem of the Union, and to suggest to you that it should, this year and in the years to come, be given special significance as a day of renewal and reminder, a day upon which we should direct our minds with a special desire of renewal to thoughts of the ideals and principles of which we have sought to make our great Government the embodiment.

"I, therefore, suggest and request that throughout the nation, and, if possible, in every community, the 14th day of June be observed as Flag Day, with special patriotic exercises, at which means shall be taken to give significant expression to our thoughtful love of America, our comprehension of the great mission of liberty and justice to which we have devoted ourselves as a people, our place in the history, and our enthusiasm for the political program of the nation, our determination to make it greater and purer with each generation and our resolution to demonstrate to all the world its vital union in sentiment and purpose, accepting only those as true compatriots who feel as we do the compulsion of this supreme allegiance.

"Let us on that day re-dedicate ourselves to the nation, 'one and inseparable,' from which every thought that is not worthy of our fathers' first vows of independence, liberty, and right shall be excluded, and in which we shall stand with united hearts for an America which no man can corrupt, no influence draw away from its ideals, no force divide against itself, a nation signally distinguished among all the nations of mankind for its clear, individual conception alike of its duties and its privileges, its obligations, and its rights."

THE END

GLOSSARY OF MILITARY AND NAVAL TERMS

Abatis. In field fortification, rows of felled trees, with the smaller branches lopped off, and the others sharpened and turned toward the enemy.

Adjutant. A military officer whose duty it is to assist the commanding officer of a regiment, artillery district, battalion, squadron, garrisoned post, or detachment of troops.

Adjutant-General. The military secretary of a general officer. He publishes orders, keeps records, and attends to military correspondence.

Adjutant-General's Department. The corps of officers comprising the Adjutants-General.

Admiral. The highest ranking officer of the Navy. He receives a salute of 17 guns.

Advance Guard. A portion of a body of troops, marching in front of the main column, to insure its safety against surprise.

Aide-de-camp. A confidential officer selected by a general to assist him in his duties.

Ammunition. Explosives and projectiles for charging guns of any sort. *Fixed Ammunition* is that in which cartridge case and projectile are united; used in small arms, machine guns, and small caliber rapid-fire guns.

Ardois Signals. A system of signaling in which a set of electric lanterns arranged vertically on the forestay of a vessel or staff is used to send alphabetical signals. The globes of the lanterns are half red and half white and the letters are formed by the different combinations of the two colors.

Armament. Offensive weapons with which the Army and Navy are equipped such as guns, mortars, torpedoes, and their tubes, mines, and aircraft guns.

Armor. The protection afforded the sides and decks of warships. It is classified as wrought iron, compound, all steel, and face-hardened armor. This armor is thickest along the middle portion of the warship and near the water line and tapers at the ends. Gun protection consists of shields, turrets, and side plates designed to protect the gun crew.

Army. The organized land forces of a nation, including its war material; in a limited sense, any portion of its forces of strength greater than a division and acting independently.

Army Corps. One of the primary subdivisions of an army and its strategic unit. Usually composed of two or three divisions of infantry, a brigade of cavalry, the corps artillery, a battalion of engineers, the ammunition train, telegraphers, and signalers, the aero contingent and the field hospital.

Arsenal. An establishment in which war material is manufactured or stored. The principal arsenals are: Watervliet (West Troy, N. Y.), Springfield (Mass.), Frankfort (Philadelphia), Rock Island (Ill.), and Dover (N. J.).

Artillery. Movable and fixed cannon, and troops trained in their use. It comprises coast, fortification, siege, field, horse, and mountain artillery.

Artillery School. For officers of the artillery branches at Fort Monroe (Va.), and Fort Sill (Okla.).

Articles of War. An act of Congress, approved April 10, 1806, to establish rules for the government of the Army. They form part of the Army Regulations.

Automatic Machine Guns. Rapid-fire guns in which the force of recoil serves to load and fire the piece.

Ballistics. That branch of the science of gunnery which treats of the flight of projectiles.

Bandoleer. A small arms ammunition belt, consisting of six pockets, each containing two clips or ten rounds. Worn over one shoulder and under the opposite arm.

Battalion. A unit of organization of infantry or field artillery. In infantry consisting of four companies, in artillery from two to four field batteries.

Battery. In the navy all the guns on one side of the ship, as starboard battery or port battery. In field artillery, its *unit of combat*, consisting of four pieces with their caissons, three to each piece. In fortifications, the entire structure erected for the emplacing, protection and service of one or more guns or mortars, together

with the pieces so protected. The guns of a battery are of the same size and power, and are grouped with the object of concentrating their fire on a single target and of their being commanded by a single individual.

Battle Chart. A chart used in battle, fire, and mine command stations which covers their respective areas. It shows the channels and different depths of water passable by the several types of war vessels. It also shows the sectors of fire of the several batteries in the particular command, and in case of mine commands the position of the fields, etc. It indicates the penetration in Krupp armor for each 1,000 yards of range for the several classes of armament.

Battle Flag. The national flag (garrison flag) displayed at a seacoast or lake fort at the beginning of and during an engagement, whether by day or night. It is also flown from the mainmast of vessels engaged.

Battleship. A large vessel protected by heavy armor and carrying a heavy armament, including guns of largest caliber. See *Cruiser* and *Dreadnaught.*

Bells. The nautical method of dividing time. The twenty-four hours is divided into six parts, beginning at twelve o'clock midnight. In each division are eight half hours which are numbered by the successively increasing strokes of the ship's bell. Eight bells are struck at twelve, four, and eight o'clock respectively. One bell is half-past twelve, four, and eight, and so on.

Bivouac. A temporary place of repose for troops, in which they are sheltered by shelter-tents, or improvised shelter of any kind, or sleep in the open air.

Bomb. A missile, also called grenade, that explodes on impact, used in trench combat or is dropped from aircraft.

Bomb-proof. A military structure to resist the penetration of shell, constructed of metal or of concrete and earth, to protect magazines or stores, or to shelter troops.

Brigade. An army unit comprising usually three regiments.

Brigadier-General. A general officer commanding a brigade, and ranking next below a major-general and next above a colonel. He receives a salute of eleven guns.

Buoy. A floating object moored to the bottom, used for temporarily marking the position of mines, channels, and target positions.

Caliber. The diameter of the bore of a gun measured in inches, or of a small arm in 100ths of an inch. Also used to express the length of cannon; e.g., a 12-inch gun 42 calibres long would be 42 feet long; a 6-inch gun 52 calibres long would be 26 feet long.

Cannon. A general term for artillery weapons and firearms not carried in the hands. Guns are long (generally from 30 to 50 calibres), have flat trajectories, and are used for low-angle fire (less than 15 degrees), with high velocities (from 2,000 to 3,000 foot seconds, about). *Mortars* are short (generally about 10 calibres), and are used for high-angle fire (from 45 to 70 degrees), with low velocities (from 550 to 1,300 f. s., about). *Howitzers* are intermediate between guns and mortars.

Captain. In the army, the officer who commands a company, battery, or troop; in the navy, the officer who commands a ship.

Castrametation. The art or act of encamping, or the act of marking or laying out a camp.

Charge. The charge consists of the powder and the projectile. The powder for all large cannon, to include 4.7-inch guns, is enclosed in silk or serge bags and is separate from the projectile. In guns of greater caliber than six inches it is put up in two or more sections or bags. For small calibers the projectile and powder are in cartridge form, called *fixed ammunition.*

Chief of Staff. The chief of the *General Staff Corps,* the commanding general of the army. Military adviser to the Secretary of War.

Coast Defense. The military and naval dispositions and operations necessary to resist a naval attack on any part of the coastline.

Coast Guard. The Revenue Cutter and Life Saving Service of the Treasury Department, and which in time of war or emergency becomes a part of the Navy.

Collier. A special type of vessel designed for supplying coal to war vessels at sea. The latest type are equipped with cableways capable of coaling a vessel even in a heavy sea.

Cossack Post. A group of four men substituted for the picket and its sentinels in the ordinary outpost system. Each post has one man on the watch, posted only a few yards out in front. Is more economical of men and less fatiguing than the ordinary system.

Cruiser. Generally a war vessel, capable of making long voyages, and which is utilised for the ordinary duties of a navy in time of peace. *Light Cruiser:* one whose vitals are protected by a light armored deck and whose gun positions may have light protection. Displacement varies from 1,500 to 5,000 tons and speed from 16 to 30 or more knots, ac-

cording to various designs. *Scout:* a light cruiser in which protection and armament is considerably reduced to allow for large fuel storage space and machinery installation of great power to give as high a speed as possible. *Armored Cruiser:* one protected by moderately heavy armor on sides, etc., armed with heavy guns, 8-inch to 12-inch as a rule, and capable of high speed, 18 to 22 knots, approximately. Armament is usually mixed as in the pre-dreadnaught battleship from which this class differs in that its armor and armament is lighter and the speed greater. Displacement varies from about 9,000 to 16,000 tons.

Department. A military geographical sub-division of the country, the troops within its limits being commanded by the *Department Commander* (a brigadier or major general). There are 5 departments: (1) Department of the East, (2) Department of the Lakes, (3) Southern Department, (4) Western Department, (5) Philippines.

Destroyers. See *Torpedo Craft.*

Disappearing Carriage. A gun carriage so constructed that it will carry its gun to a firing position above the parapet and upon discharge carry it back to the original loading position behind the parapet.

Displacement. The quantity of water displaced by a ship, the weight of the displaced liquid being equal to that of the displacing body.

Division. A unit of organization, usually comprising two brigades of infantry, a regiment of cavalry, and a battalion of artillery, besides engineers, hospital corps, detachment and train. A *cavalry division* comprises two or three cavalry regiments with a battalion of horse artillery and the necessary train.

Dreadnaught. These vessels have a main battery of all big guns (11 inches or more in caliber) and no intermediate battery. The secondary or torpedo defense battery is composed of guns of 3-inch to 5-inch caliber. Of 18,000 tons displacement or more and a speed of at least 18 knots. *Pre-Dreadnaught:* A battleship, usually not over 16,000 tons, having a mixed battery—main battery of heavy guns, 8-inch or above; intermediate battery of 4-inch to 7-inch inclusive, and secondary battery of small guns less than 4-inch. *Super-Dreadnaught:* A term applied to later vessels of Dreadnaught type where there are more than 10 big guns in the main battery, or a very large displacement, 25,000 tons or more, and a speed of from 21 to 25 knots. In these the secondary or torpedo defense battery is usually of 5-inch or 6-inch caliber.

Endurance of Cannon. The life of a cannon or the number of times a piece is capable of being fired before relining is necessary. The life of heavy guns is assumed to be approximately 250 service shots.

Explosives. The general subject of explosives has in recent years undergone complete readjustment. The primary explosive, gunpowder, made by the mechanical union of nitre, sulphur, and charcoal, has been almost entirely superseded by chemical compounds. Chemical explosives are derived from the detonating mixtures originally devised to set the explosion of gunpowder in course from the compound nitroglycerine and from the reaction of chemicals on vegetable fibre, of which gun-cotton is a type. Explosives are divided into two principal classes, the detonators, which are transformed into gases instantaneously and without the presence of exterior pressure and those other compounds which require to be burned in a confined space in order to develop their force.

File. In infantry a file is two men, the front rank man and his rear rank man, the front rank man is the *file leader.* When the rear rank man is missing it is called a *blank file.*

File Closers. Officers and non-commissioned men posted in rear of the line to maintain order and see that instructions are properly followed.

Furlough. Written permission, signed by the commanding officer, allowing absence for the stated time. On return the Quartermaster issues money equivalent to rations not used while away.

Fuse. A mechanical firing device used to ignite or detonate a bursting charge in a projectile.

General. An officer of the army, ranking next above a colonel, including brigadier, major, and lieutenant generals and generals proper.

General Staff. A corps of selected officers, charged with the duty of studying foreign armies and possible theatres of war, and of strategic questions in general, and preparation of plans for national defense.

Guard. A detachment of men, detailed daily in camp or garrison, for the protection of public property, to guard prisoners and to insure order. The guard is divided into three reliefs, each on duty for two hours in turn and off four hours, and posting its own sentinels.

Guard Mounting. A ceremony for forming the guard before it enters on its duties for the day.

Laws of War. Laws governing the conduct of war among civilised nations. They relate principally to the treatment of

prisoners, spies, traitors, and private property, and to blockades, rights of capture, censorship, etc. They have either been established by long usage or agreed to by international conventions.

Lieutenant. A company officer, ranking below a captain. There are two grades, *First* and *Second Lieutenant*, the former being senior in rank.

Lieutenant-Colonel. A field officer ranking next below a colonel.

Machine Guns. Guns of one or more barrels using fixed ammunition and provided with mechanism for continuous loading and firing. The mechanism may be operated by man power or by the force of recoil. They are designed to deliver a strong, rapid, continuous, and accurate fire of small projectiles.

Major. A field officer ranking next below a lieutenant-colonel, and next above a captain. His proper command is a battalion in infantry and field artillery, or squadron in cavalry.

Major-General. An officer, ranking next above a brigadier-general, commanding a division. He receives a salute of 13 guns.

March. The movement of a body of troops from one point to another, whether on foot or mounted. Infantry marches ordinarily from fourteen to fifteen miles a day, but this may be increased to forty miles in thirty hours; cavalry or horse artillery can accomplish thirty to thirty-eight miles a day; field artillery about twenty-five miles.

Marine Corps. A semi-independent branch of the navy, originally intended for guard and police duty aboard ship, now constituting an elastic and quickly mobilized force for infantry duty in foreign waters. Has no permanent company or regimental formation, but is organized as need arises into battalions. Is generally subdivided into small marine guards for each of the vessels in commission. Is commanded by a major-general and has its own commissary and pay organization.

Mine Planter. A seagoing tug 150 feet in length and about 30 feet beam, having large deck space forward and but little rigging. It is equipped with booms, winches, davits, catheads, triplex blocks, etc., necessary in handling and planting assembled mines.

Mobile Torpedo. A cigar-shaped metal case containing a charge of high explosive with firing device, intended to run under the surface of the water and attack the hull of an enemy vessel. There are two classes, dirigible and automatic. The former is controlled by electrical or other cables; the latter carry their own propelling agent and keep a given direction automatically. The Whitehead torpedo, of the latter type, is now made of steel or of phosphor bronze, 21 inches in diameter and 15 feet long, divided into compartments and carrying a large explosive charge forward which is fused to explode on impact. They may be launched from tubes below the surface or above water.

Mobilization. The transformation of an army from its peace to its war footing. Theoretically mobilization plans are fully prepared in time of peace, so that, at the outbreak of war, it is only necessary to issue the requisite orders for calling in the reserves and for the new organization of the forces at designated concentration camps.

Officer. A commissioned officer of the army or navy. Naval officers and their corresponding rank with the army are: Admiral with the commanding general, rear-admiral with major-general, captain with colonel, commander with lieutenant-colonel, lieutenant-commander with major, lieutenant with captain, lieutenant (junior grade) with first lieutenant, ensign with second lieutenant. *Non-Commissioned Officer:* an enlisted man, appointed by a regimental commander to the grade of sergeant or corporal. The corresponding term in the navy is *Petty Officer*.

Ordnance. The war material which pertains to the armament, its use and its care; such as guns, carriages, small arms, soldiers' and horse equipments, ammunition, gun cleaning material, etc.

Outguards. Small detachments sent toward the enemy; may be of three classes: *Pickets, Sentry Squads*, or *Cossack Posts*.

Pace. Thirty inches, the length of the full step when marching in quick time—120 to the minute.

Periscope. An apparatus used on the Holland type of submarine boat for observation, sighting, and steering. A similar apparatus used on the Lake type of submarine is called the Omniscope.

Proving Grounds. Government ground used for testing cannon, powder, projectiles, explosives, armor, and other ordnance. Sandy Hook (N. J.) Army, and Indian Head (Md.) Navy.

Rapid-fire Gun. A single-barrel gun provided with breech mechanism, mounting, and facilities for loading, aiming, and firing with great rapidity. The breech mechanism is operated by a single motion of the handle or lever. The smaller calibres use fixed ammunition.

Regiment. A military unit of organization, consisting normally of three battalions, with its proper regimental staff.

Retirement. The placing of an officer or soldier on the retired list; that is, out of

service, with reduced pay (seventy-five per cent. of his pay on the active list). Officers are retired for disability (wounds, sickness, etc.), or by reason of age (64 years), or on their own application after long service.

Salute. (1) A mark of courtesy or compliment. The salute with the hand, the rifle, or the sabre (or sword). (2) An honor to a superior by firing guns, sounding drum or bugle calls, etc., presenting arms, etc. The President receives a salute of 21 guns; the Vice-President, 19 guns; the Secretary of War, 17 guns; Admiral or General, 17 guns; the Assistant Secretary of War, 15 guns; the Lieut.-General, 15 guns; major-generals, 13 guns, brigadier-generals, 11 guns. (3) *National Salute.* A salute of 21 guns. Also the salute to a foreign national flag. When foreign warships salute their own flag in a United States port, a salute of the same number of guns as those fired by the warship is returned by the nearest fort. (4) *The Salute to the Union* is one gun for each state.

School Ships. The states of Massachusetts, Pennsylvania, and New York maintain ships of instruction for the education of young men in navigation. Vessels are loaned by the United States Government and naval officers are detailed as instructors.

Secret Code. The naval code used between ships of the nation is carefully guarded, and it is the duty of the commander to destroy his copy before capture. In addition there is a secret naval telegraph cable and wireless code on an elaborate basis, used for all confidential messages.

Searchlight. A high-power electric arc light, with 18 to 60 inch projector, used for night illumination. The maximum effective illuminating range on a clear night is approximately 8,000 yards.

Shell. A steel or cast-iron projectile, the centre of which is hollowed to be filled with the bursting charge.

Shrapnel. A projectile composed of a number of spherical balls enclosed in a cast-iron case, with a bursting charge in either point or base to scatter the missiles.

Signal Corps. A branch of the army, which has charge of the signal, telephone, telegraph, balloon, and aeroplane service.

Squadron. (1) A unit of organization of cavalry, composed of four *troops.* (2) In the navy, a division of a fleet, or a small number of vessels acting together.

Station. The allotted cruising ground of a naval vessel or squadron. The United States maintains the following stations: North Atlantic, Pacific, Asiatic, European, and South Atlantic.

Submarines. Vessels capable of running either on the surface of the water or submerged. The offensive armament is the torpedo, and the later boats are equipped with light guns for use while on the surface.

Submarine Mines. Metal cases enclosing large quantities of high explosives, designed to attack the sub-water parts of warships. They are placed below the surface of the water in the approaches to a harbor or roadstead. They are either *self-acting* or *controlled.*

Terrain. The ground, its configuration and natural and artificial diversification. The topographical character of the country, region, or tract, as viewed from a military standpoint.

Torpedo Craft. Vessels whose main offensive armament is the torpedo and which rely on high speed, small size, and a few light guns for defense. *Torpedo Boats:* small torpedo craft of from 50 to about 300 tons displacement. Speed varies from about 19 to 29 knots. Small or no guns. *Destroyers:* larger torpedo craft of from about 350 to 1,100 tons displacement, carrying more torpedo tubes and heavier guns (about 4-inch caliber), and having greater freeboard and speed (from about 25 to 33 knots).

Torpedo Shell. A deck-piercing shell with an unusually large explosive cavity, fired from mortars for the purpose of carrying a large explosive charge to the decks of war vessels.

War College, Army. A military school for the training of General Staff officers established in Washington, D. C. It is under the control of a brigadier-general of the General Staff.

War College, Navy. A Naval School for the study of problems affecting the proper handling of the fleet and problems affecting naval strategy, Newport, R. I.

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